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PSYCHO-ANALYSIS AND EDUCATION: THE VALUE OF SUBLIMATING PROCESSES FOR EDUCATION AND RE-EDUCATION.[1]

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In a previous paper[2] on the relation of psycho-analytic work to the problems of education, I laid especial stress on what may be called the *negative* aspects of education, that is to say, on the avoidance of measures calculated to produce lasting injury on the child's mind, and I pointed out a number of respects in which present-day methods fell short of even this humble ideal. In the present paper I propose briefly to call attention to some *positive* aspects of the relation between psycho-analysis and education, namely, certain respects in which the knowledge gained through psycho-analytic work could be made use of for educational purposes to great advantage. The knowledge in question relates to the process known as sublimation, one which is at the basis of a great part of educational endeavor.

The word "sublimation," borrowed from the terminology of chemistry, was introduced by Freud to denote a psychological process defined by him[3] as "the capacity to exchange an original sexual aim for another one which is no longer sexual,

[1]Read before the American Psychological Association at Washington on December 29, 1911.

[2]*Psycho-Analysis and Education.* Journal of Educational Psychology. Nov., 1910. P. 497.

[3]Freud. *Sammlung kleiner Schriften zur Neurosenlehre.* Zweite Folge, 1909. S. 181.

though it is psychically related." In another place[4] he defines it as "a process by which outlet and application in other regions is opened to over-strong excitations from the individual sources of sexuality." A few general remarks on this subject will be necessary before we can discuss the bearing of it on education.

It has of course long been recognized that the sexual instinct supplies important contributions to more general mental tendencies and capacities, the evidence for this being principally of two kinds: In the first place the close association and even resemblance between the sexual impulse and such activities as those of religion and art leave no doubt in the mind of most thinkers that the former furnishes a considerable body of feeling which finds application in these spheres. Some authorities would go so far as to trace religious and artistic activities entirely to the sexual instinct, and indeed the evidence in favor of this view is much more extensive than is generally appreciated, but the commoner opinion is that the instinct merely adds some of its own peculiar feeling and impulses to religious and artistic tendencies that are already present in the mind, and which originate in other sources. This problem does not concern us here, and it need only be repeated that the main point is accepted by practically all writers, namely, that at all events *some* of the driving force behind the impulses and interests of art, religion and many other mental activities is derived from the sexual instinct. The following passages illustrate this idea; very similar ones might be quoted from Metchnikoff, Moebius, Schopenhauer, and many other writers. Bloch says[5]: "Aus diesen innigen Beziehungen zwischen sexueller und geistiger Produktivität erklärt sich die merkwürdige Tatsache, dass gewisse geistige Schöpfungen an die Stelle des rein körperlichen Sexualtriebes treten können, dass es psychische *sexuelle Aequivalente* gibt, in die sich die potentielle Energie des Geschlechtstriebes umsetzen kann. Hierher gehören viele Affekte, wie Grausamkeit, Zorn, Schmerz und die produktiven Geistestätigkeiten, die in Poesie, Kunst und Religion ihren Niederschlag finden,

[4]Freud. *Drei Abhandlungen zur Sexualtheorie.* Zweite Auflage. 1910. S. 83.
[5]Bloch. *Das Sexualleben unserer Zeit.* Zweite Auflage, 1907. S. 100.

kurz, das ganze *Phantasieleben* des Menschen im weitesten Sinne vermag bei Verhinderung der natürlichen Betätigungen des Geschlechtstriebes solche sexuellen Aequivalente zu liefern, deren Bedeutung in der Entwicklungsgeschichte der menschlichen Liebe wir noch näher zu betrachten haben." Loewenfeld[6] similarly declares: "Dass die Libido oder überhaupt die Sexualität einen sehr bedeutenden Einfluss als Triebkraft auf das seelische Leben ausübt, hierüber sind alle jene, welche sich mit diesem Probleme beschäftigten, einig."

In the second place, experience has shown that various activities possess in a high degree the power of diverting sexual impulses, and of thus alleviating undue tension of sexual origin. The general recognition of this fact is illustrated by the frequency with which the advice is given to those leading an abstinent life, or struggling with the habit of masturbation, to apply their interest and impulses to sport, work, and so on. That the energy thus won from the sexual sphere represents a cultural gain and has proved of the highest significance in the progress of civilization is also widely appreciated.

There are, however, several matters in this connection that are not commonly recognized, and which are of considerable importance in regard to the problems of education. The usual view of sublimation, one implicit in most writings on the subject, is that it is a process whereby the normal sexual desire of an adult becomes, more or less consciously, replaced by an interest in other matters. This conception contains, as we shall see, a number of important errors; they may be summed up by opposing the following statement: Sublimation concerns not so much the normal sexual desire as the individual components of the sexual instinct; it refers to the child far more than to the adult; it is an unconscious process, not a conscious one, and it does not consist in a replacement. These points may next be considered in detail, and in the reverse order from that just given.

(1) The exchange of the secondary social aim for the original sexual one constitutes not so much a replacement of the one by the other as a diverting of the original energy into a fresh

[6]Loewenfeld. *Ueber die sexuelle Konstitution*, 1911. S. 173.

direction; the occurrence is, in fact, better described by the term displacement than by that of replacement. The conative aspects of the affects in question may perhaps be best denoted by the expression desire, or, in Freud's language, the wish. Now, without maintaining that this is, strictly speaking, a form of energy,[7] or that the laws relating to physical energy can be directly applied to it, one cannot avoid seeing certain resemblances between it and physical energy, sufficient at all events to justify one in drawing an analogy between the two for purposes of illustration. The principle of the conservation of energy, for instance, is certainly valid in the mental sphere to a far greater extent than has generally been supposed. The careful psycho-analytic work of the past few years, and particularly that aspect of it that is concerned with unconscious mental processes, has shown with ever-increasing plainness that on the one hand desires and other affective processes are very tenacious of existence and resist decay with a really astounding vigor, and that on the other hand what appears to be a cessation of desire is frequently found on closer examination to be actually a transformation of the form in which the desire is being manifested. One feels, therefore, very inclined to venture the generalization that the same principles of conservation and transformation of energy hold in the mental as in the physical sphere. Such a theory would require a very extended experiential testing before it could be raised to a level of high probability, but the impression one receives of the truth of it is at times very intense when one over and over again witnesses how a given desire may run through a person's life, baffled here and thwarted there, but constantly and untiringly seeking for some means of expression. In psycho-analytic work one sees clearly that the process above referred to of replacement and diverting of interest is substantially one of continuity, and that the later expression is, so to speak, a psychical equivalent of the earlier one. In other words, the energy employed in making use of the new interest is derived from the old one, and the later activity is only another, more indirect, means of gratifying the same de-

[7]See on this point Bleuler, *Die Psychoanalyse Freuds*, 1911. S. 73, 74.

sire. In this way various fundamental desires may run through the whole of a man's life, though the continuity of their manifestations may be not at all apparent to the casual observer.

The reason why this continuity is in most cases not obvious is because the resemblance between the two forms of expression does not appear on the surface, and is often to be revealed only through some analytic procedure. In many instances the association between them is apparently merely a superficial one, and the fact is overlooked that this covers a deeper and inherent connection in the subject's unconscious. The transference of the desire from one field of interest to another is effected by means of the mechanisms that Freud in his *Traumdeutung* has shown to be characteristic of unconscious functioning in general; further, the causes of the transference are the same here as in other mental processes where the same mechanisms are to be observed, in relation to dreams, wit, neurosis, and so on. Most often it is largely a matter of displacement alone. The affect, or conative trend, becomes dislocated from the idea with which it was originally connected, and then associated with another more suitable one. It is important here to bear in mind that it is the same affect, or desire, that is operative in the two cases; it is not a replacement of one interest by another, but a displacement of a given affect from one idea to another, from the first interest to the second. More complex changes are brought about in the occurrence that is characterized by the replacement of one affect by another, for instance, love by hate or anger. In some cases it is believed by a number of writers that a true conversion takes place by which the one affect becomes literally transformed into the other, particularly love into fear; while others, including myself, consider that the first affect operates merely by evoking an exaggerated manifestation of the second one, which is thus in a way a reaction to a stimulus. In either event the empiric result is the same, namely, that the one affect, which is unable to find satisfactory expression, disappears from view and is succeeded by the other, which therefore stands in some generic relation to the first.

(2) It is important to bear in mind that the process of sub-

limation is mainly an unconscious one; that is to say, it takes place without the subject being aware of it. It does of course happen that, either spontaneously or on advice, a person who is troubled with a desire that cannot be gratified devotes himself to the pursuit of sport, study, and so on, and in so doing consciously sets going the first stage of the sublimating process by providing the opportunity for this, but even then the actual transference of the affect proceeds unconsciously, as one discovers through psycho-analysis. Occurrences such as these, however, comprise, as will presently be explained, only a small part of what is known as sublimation, and in most instances the whole process is entirely unconscious. This is emphasized in the following passage of Loewenfeld's,[8] who fails, however, to draw some very obvious inferences from it: "Dabei muss noch wiederholt betont werden: *Nicht die im Bewusstsein sich vordrängende Libido, d.h. das als solches fühlbare geschlechtliche Verlangen ist es, was die förderlichen Einwirkungen der Sexualität auf unser Seelenleben zu stande bringt. Dieser Einfluss kommt lediglich der in das Unterbewusstsein herabgedrängten oder überhaupt nic in das Bewusstsein gelangten Libido, resp. den ihr entsprechenden zentralen Erregungen zu.*"

(3) Of predominant importance in regard to the problems of education is the fact that the process of sublimation is much more a matter of childhood mentality than of adult. Any sublimation that occurs in adult life is but a feeble copy of the enormous extent to which it goes on during childhood, especially during the first half of this; in fact, the weaning of the child to external and social interests and considerations, which is the essence of sublimation, is perhaps the most important single process in the whole of education. The spontaneous activities and interests of children are totally different from those that are the aim of educational strivings, and they have to be replaced by these. In accordance with the principle mentioned above, however, this replacement is not so much the putting of fresh educational interests in the place of the earlier spontaneous ones as the diverting of fundamental desires and

[8] Loewenfeld. Op. cit., S. 180.

interests into new channels; it is the utilizing of the same energy in other ways. Appreciation of this fact would lead to a much closer study than has hitherto been made of the nature of the energy that stands at our disposal for educational purposes, and of the forms in which it spontaneously manifests itself. Teachers empirically recognize the importance of presenting their subject-matter in such a way as to appeal to children, but the efforts so far made in this direction have been based on a very inadequate study of what the primary interests in children that have to be appealed to really consist in. From Clark University appeared recently a stimulating paper[9] containing the data of a questionaire on "the spontaneous constructions and primitive activities of children," including such matters as the kind of things children *spontaneously* do with snow, sand, earth, string, stones, knives, and so on. This paper of Acher's is valuable not only for the extensive data it contains, but also for the clear-sighted vision shown for the immediate bearing of these on the problems of education. I cannot do better than quote the following passages from it: "The student of child study who is familiar with the material that has been collected in the past two decades on this subject cannot but be impressed with the great difference which exists between the theory of education which this child study investigation suggests on the one hand and the theory which underlies much of the actual school work on the other. It is quite evident that there are many instincts and interests of children already revealed by these investigations which are not taken account of and utilized by the school programme of to-day. * * * It thus becomes the imperative duty of educators to follow this course of development and work with the current of psychic evolution and not against it as is so often the case at present. * * * It is becoming more and more clear as the child study material accumulates that the child has feelings, motives, instincts and interests that should guide the educator in his work rather than that the educator should undertake to direct and modify the child's development. The child must be allowed to evolve naturally and

[9] E. A. Acher. American Journal of Psychology. Jan., 1910. Vol. XXI. P. 114.

in harmony with its racial inheritance. But in the school work of to-day the social inheritance of comparatively recent times continues to be imposed on the child and the deeper impulses of its soul are scarcely touched. * * * It is needless to say that there are hundreds of other vague instincts, motives and interests in the child's soul besides those above referred to. The full and complete expression of these would give every child a richness of mind that would characterize it all through life and enlarge its sphere of interests to an extent hardly dreamed of now."

There are, unfortunately, two serious deficiences in Acher's work, deficiences that are inherent in his method of approach, and which need to be remedied by work done along other lines that may serve as a complement to his observations. Namely, he omits to trace either forwards or backwards the spontaneous activities studied by him. On the one hand, not developing the principle of the displacement of energy discussed above, he fails to indicate the precise educational and social uses to which these activities can be put, nor does he discuss the normal fate of the tendencies in question. On the other hand, he fails to see that they are not, as he thinks, primary in nature, but are themselves the outcome of still deeper and older tendencies present in the individual from the earliest childhood. This could not, of course, have been determined from a mere questionnaire inquiry, and well illustrates the limits of this method. By psycho-analysis of the individual one is enabled to trace in great detail the psychogenesis and later evolution of each of these activities, and if a sufficient experience demonstrates the presence of constant features in this evolution one can with considerable probability formulate certain generalizations along these lines. It may be said that anyone accustomed to psycho-analytic work could at once interpret the majority of Acher's observations in terms of still more primitive childhood tendencies, and also indicate a variety of later manifestations in which they might become expressed. This matter will presently be considered from another point of view.

(4) The process of sublimation is concerned with much deeper agents than mere ungratified sexual desire. The whole

subject is commonly discussed in a superficial manner as if it were a question of the individual being disappointed in love and seeking consolation in the arms of religion, of work and what not, or of his being spurred on by the stimulus of love into some artistic or other activity. For instance, Loewenfeld[10] constantly tests the significance of sublimation for scientific and artistic work, etc., by trying to correlate a given production with a possible love affair. Such things may presumably happen, but they constitute a very small part of what is meant by the term sublimation. It cannot be insisted on too strongly that sublimation is concerned not so much with normal sexual desire, in the narrow sense, as with the individual biological components of the instinct, *i. e.,* with the various infantile tendencies that later on form the basis of erotic desire as well as of many other (non-sexual) interests. This is clearly of cardinal import for education, for it means that sublimation is not a matter of displacing for other purposes a diffuse energy, but an accurate and specific transference of energy from one given field of interest to another; each special later interest corresponds with a special primary component of the sexual instinct.

In psycho-analytic work one also obtains an insight into the function served by the process of sublimation and the forces that bring it about. It is found that the earlier tendencies that are in this way displaced by later ones are of such a kind as to be unacceptable to the social and ethical standards of a civilized community, and therefore also to those of the child as soon as he begins to be subject to the pressure of his environment, *i. e.,* after the age of about six months. They concern such tendencies and traits as preoccupation with his own body, and especially with particular parts of this, interest and pleasure in various bodily functions, especially those of excretion, curiosity about such questions as the difference between the two sexes, the origin of babies and the nature of married relations, selfish inconsideration for others, jealousy and resentment at being disturbed or interfered with, and so on, tendencies which modern writers group under the broad term

[10]Loewenfeld. Op. cit., S. 190, 191, 210, 220, etc.

of sexual. These tendencies have to be renounced by the child, the completeness and ease with which this is accomplished varying greatly from one instance to another. They, of course, become forgotten in later life, or, as it is technically called, "repressed"; this is one reason why they are so extensively ignored by adults, and the significance of them for childhood development greatly underestimated. They do not, however, die, as is generally supposed, but undergo a transformation, finding an outlet in more suitable modes of expression, and thereby furnishing energy of incalculable value for social and educational activities; this is the process of sublimation.

It is difficult to furnish actual instances of sublimation that would carry due conviction, because one is not justified here in assuming any considerable familiarity with unconscious mental processes, so that the instances given will run the risk of appearing like mere unsupported and improbable assertions. With this reservation, however, the following remarks may be made. It has fallen to me, as to most other psychoanalysts,[11] to have the opportunity in a great number of cases to trace the impulses that led various persons to enter upon their respective profession or employment, and even matters so important as this one finds to be dictated by unrealized and buried tendencies to a far greater extent, in comparison with external inducements and opportunities, than is generally supposed. These external factors, important as they may seem to the casual observer, are often but the pretext for the expression of some primary, submerged striving. A child, for instance, who has conquered a sadistic love of cruelty may when he grows up become a successful butcher or a distinguished surgeon, according to his capacities and opportunities. One in whom the exhibitionistic fondness for self-display was pronounced may develop into an actor, an auctioneer or an orator. There comes to my mind a patient who as a child had shown an unusually strong interest in the act of micturition, in the guidance of the flow, in the power of it, and so on: when a little older he was passionately fond of playing

[11]See Stekel, *Berufswahl und Kriminalität*. Archiv für Kriminalanthropologie und Kriminalistik, 1911, Bd. XLI., and Fortmüller's review of Ostwald's *Grosse Männer* in the Zentralblatt für Psychoanalyse, Jahrg. I, 1911, S. 348.

with streams and puddles, manipulating them in every possible way; he is now a well-known engineer, and has constructed a number of canals and bridges. Others, whose primary interests concerned more solid excretions, sublimated these in their childhood through various games ("spontaneous activities" of Acher), and later became—one an architect, another a sculptor, a third a type-moulder, and so on; one, finding that solid substances were more easily moulded and played with after they had been heated, developed a fondness for cooking and became a chef. It is not maintained that these factors were the only ones operative in determining the choice, and still less that the professions named are always chosen as a result of the particular unconscious agents just mentioned, but extensive experience of the tenacity, vigor and durability of such unconscious factors forces one to estimate their importance much more highly than is generally done.

Returning to the subject of education, we have to note that processes similar to those just indicated in connection with general matters, such as the choice of a profession, are also at work in narrower and more specific interests of childhood life. Whether a particular subject, geography, history, etc., will appeal to a given child, and whether he will be successful in his studies of it, very largely depends on the special aspect that is first presented to him, and on the extent to which this aspect associates itself with interests already existent in his mind. On the other hand, special difficulty that a child may have in acquiring a given subject is often due, not, as is generally thought, to any inherent deficiency in this respect, but to inhibitions that originate in a more primary interest with which the subject has become secondarily associated, and which has transferred on to the latter its own affects, difficulties and conflicts. The main thesis of this paper is that a fuller knowledge of the primary interests and tendencies of the child would enable us to devise methods of education that would, as it were, link on the tendencies we wish to implant to those already existing, and thus by accurately diverting the primary interests utilize them for social and educational purposes with much greater effect than is achieved by our present empirical and rule-of-thumb methods.

If these principles are accepted the question inevitably arises as to whether they are at all compatible with the present system of mass teaching, or whether on the contrary they do not lead to an insistence on a more individualistic system; the importance of the question lies in the fact that it is a practical one, so that the value of the principles will probably be estimated by it. It cannot be denied that the weight of the foregoing considerations must be added to that of evidence from very different sources which goes to show that much greater attention will have to be paid to the individual child if the best results are desired. Indeed, this whole question may be regarded as settled on the scientific side; it is now merely a financial one. In this connection, however, we may add the following consideration: As has been insisted on by both Freud[12] and Loewenfeld,[13] there are distinct limits set by nature to the extent to which sublimation is possible, and it is, above all, important to bear in mind that these vary enormously with different individuals. Our present system of forcing all children except those obviously defective through the same intellectual mill is probably productive of much less harm than our even stricter custom of exacting, under fearful penalties, a uniform moral, social and ethical standard of behavior. In all these respects there should be a greater regard for the individual constitution and individual tendencies, a more lenient tolerance combined with a more prescient knowledge. In every branch of education there is need of a looser rein, but also of a more clear-sighted guidance. This would give us, it is true, a greater variety in the social commonwealth—not unwelcome to those who are depressed at the monotonousness of modern life,—but also a more accurate fitting of the individual to the tasks he has to fulfil, and a much greater development of individual capacity and efficiency.

To those who are startled by these prospects we may offer the following consolatory consideration, which will show that more compromise with the existing modes of education is possible than might have appeared from the previous remarks. Experience teaches that there is a considerable stereotypy in

[12]Freud. American Journal of Psychology. April, 1910. P. 218.
[13]Loewenfeld. Op. cit., S. 221.

the forms that sublimation of a given tendency takes, and, as there are only a quite limited number of such primary tendencies, it follows that the results of sublimation must show a considerable resemblance in a large number of individuals. So far as one can see, there seems to be no limit to the possible variations that the effects of sublimation may show, this being one cause of the fact that no two individuals are precisely alike, but nevertheless it is found in actual practice that similar paths are followed in a considerable number of cases, particularly when the environment is about the same. If, then, it is agreed that the children who deviate from the average are to be relatively neglected, much as they are at present, it should be possible to devise educational methods that are best adapted for the more usual types of sublimation. It will be obvious that the task of making the necessary preliminary investigations and of devising these methods cannot be relegated to the school teacher, who has not only neither the training nor the opportunity for such detailed investigations, but to whom certain aspects of them, *e. g.*, the sexual, may be counted upon to appear distasteful, and that it is probably a matter for the combined efforts of pedagogical and pedological psychologists. Their findings must then be communicated to the teacher, for whom it need not be obligatory to understand the rationale of them.

The problems of *re-education* meet us in several different forms, according as the subject is a neurotic or insane patient, a pervert, a criminal, or any other social failure. In all these the process of sublimation has failed to effect its social purpose, and the unsocial or morbid activity that has resulted is the product of primary childhood tendencies that have never been properly controlled; the subjects are victims of what may be called miscarried sublimation. The problems of the nature and variety of this miscarriage involve a study of many other matters besides those strictly belonging to education itself, and I will here confine myself to one of them where the relation to the latter is especially close, namely, concerning the possibility of the foregoing principles being applied to the treatment of the insane. I refer in particular to the advanced

cases of dementia where the patients often lead a practically vegetative existence. They are not only unable to do any useful work, but even to care for or feed themselves, and their activities may be reduced to the monotonous and reiterated performance of some apparently meaningless movement. Thanks to the studies of Jung, Abraham and many others, it is now known that these activities represent a distorted and degenerated form of infantile conduct of an auto-erotic kind. Defeated in life and prevented by their internal inhibitions and conflicts from permanently sublimating their inborn tendencies in satisfactory directions, *i. e.*, from "adapting themselves to their environment," they have reverted to a state of early childhood, and their interests and activities are correspondingly reduced and simplified. These are manifested mostly, as has just been remarked, in distorted and at first sight unrecognizable ways, but often enough in the naked infantile form itself; an unmistakable instance of the latter is the frequency with which the depths of dementia are accompanied by preoccupation with the dejecta, a condition which in the adult is equally troublesome and repulsive.

Many efforts have been made to divert the available energy of such patients into useful or, at all events, less repellent channels; a recent example that may be referred to is the work of Miss Kent[14] on habit-formation in dementia praecox. All such endeavors that I am aware of, however, have been not only too pretentious in their scope, but have not taken into account the actual nature of the energy that is to be diverted. The interests that are intended to replace the stereotyped behavior, *i. e.*, the manifestations of the infantile tendencies, are in most cases totally disconnected with the latter, whereas every effort should be made to provide interests that would directly link onto them; to do this it is, of course, indispensable that a preliminary study be made of the precise meaning of the patient's manifestations, and therefore of the nature of the energy that is at his disposal. Further, it will be evident from the previous considerations that sublimation proceeds by gradual stages, these being, in fact, parallel with the

[14] G. H. Kent. Psychological Review. Nov., 1911. Vol. XVIII. P. 374.

development of the individual. One cannot, therefore, aim too high at first, but must imitate nature in advancing deliberately from one stage to the next. It seems reasonable to infer that when an adult has reverted to a condition which psychologically is very close to that of infancy, the surest way to arouse him from his apparently hopeless state would be to get him to traverse paths similar to those characteristic of infancy. A more hopeful line of work than that commonly attempted would therefore be to correlate the activities spontaneously shown by the patients with those that they correspond to in childhood, and then make use of the paths of sublimitation instinctively employed by the normal child. No doubt modifications would have to be introduced to suit the special circumstances, but in general I am convinced that much could be learned for this purpose by studying closely the evolution of early childhood. There is every prospect that attempts carried out in this direction would prove of considerable value in the treatment of advanced dementia.

Fortunately, these unambitious efforts represent the least hopeful re-educational problems. With such patients it may be said that their sublimating capacities are for all practical purposes paralyzed, and one would be satisfied to be able to restore even a modest level of mental activity. In all other classes of case one aspires to loftier aims, certainly to making the individual an efficient member of society. This, however, is not the place to enter into the success of psycho-analysis in undoing the morbid development of these subjects by means of unravelling the psychogenesis of their unhealthy manifestations, and in thus enabling them to divert for social purposes the tendencies which their early education failed to sublimate. It is clear that, however brilliant such success may be from the point of view of the individual—and even here it is often hampered to a serious extent by both intrinsic and extrinsic factors,—from the point of view of society it can only be regarded as a palliative measure for dealing with a ruinous evil. It is time that society, confronted with the undiminishing hordes of her failures, began to inquire into the significance of a state of affairs that can almost be described as a bankruptcy of true education. The real meaning of this extravagance would

then be discovered, namely, that civilization has reached, or is on the point of reaching, the limit beyond which unguided sublimation can no longer be successfully maintained. The instinctive strivings of mankind have displaced from the primary inborn tendencies a mass of energy that through various social activities has built up what we call civilization, but it seems probable that the amount of energy in this way accessible is even now overdrawn. If the present level of civilization is to be maintained, and further progress made, it will become necessary to supplement the instinctive forces making for sublimation by a conscious and co-ordinate guidance. The first logical step in this direction must be a careful and unprejudiced penetration, along psycho-analytic or similar lines, into the deeper layers of the mind, particularly of that of the child. Such an investigation is bound to yield invaluable results for education, not only in the narrower sense of school teaching, but also for child-training in the broadest sense of the word. Endeavors along these lines, skilfully planned, should prove both a more ennobling and a more scientific method of raising the standards of the race than is the more facile, and therefore more popular, method of clamoring for the castration of "degenerates."

SEX EDUCATION IN JAPAN.[1]

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Among other things in regard to which Americans are either uninformed or misinformed concerning the Japanese people is the question of sex education, a matter just now much discussed in pedagogical circles. There seems to be an impression on the part of some persons that the Japanese have advanced farther along this line than any other people; indeed, there are some who are of the opinion that the Japanese encourage the boys to exercise the sexual functions at as early an age as thirteen or fourteen. How this idea can have originated is a mystery, but the best way to make the matter a little clearer is to set forth as far as possible the real situation, and it is for this purpose that this article is written. For our purposes the best way to treat the matter will be to begin with the education which the children receive at home and in other places outside of the schoolroom, and then to define the attitude of the school authorities toward this question as shown by the work in the schools and by their utterances.

When we turn to the question of sex education in the home we are confronted with a difficulty in classifying the people whose ideas and practices we wish to discuss. In the West we have the very poor, the lower classes, whose morals are low; the great middle class, who form the backbone and sinew

[1]EDITORIAL NOTE.—The article by Dr. Jones on "Psycho-Analysis and Education" (this JOURNAL, Vol. I, pp. 497 ff.) called forth numerous comments from our readers. One of our correspondents suggested that American educators might have something to learn from the system of sex-education that prevails in Japan. I wrote to a former student of mine, Professor Smith of Hiroshima Normal College, asking him to investigate the matter and prepare an article setting forth conditions as they actually exist. The following article is his response to this request.—W. C. B.

of the nation and its morals; and, last of all, the very rich, whose morals cannot be said to be very high, at least in some cases. But here in Japan we cannot classify our people in this way. Men of low standards of morality and men of high standards are found side by side in all walks of life. Among the lower artisan and merchant classes we find men who are as careful in these matters as they know how to be. On the other hand, there are men who have held some of the highest offices in the state, trusted ministers of the crown, great educators, and even great religious leaders, whose lives have shown that they cared but little for the first principles of common morality when such principles stood in the way of their personal indulgence.

So, instead of dividing the homes into those of middle and higher class people, we shall speak of them as those in which the children are brought up with the idea that, as men and women, they should be chaste and faithful husbands and wives; that is, conform to the main principles of sexual morality; and those families in which the parents care but little for the morals of their offspring, and show this lack of interest not only by precept (or lack of it), but by example as well.

Taking up the latter class first as being the more unpleasant of the two, we find that the children receive an education in matters of sex which is rather free, and which is more or less complete, though one can hardly admire its quality. In the first place, the children hear all sorts of talk and stories in the home itself. Much of this is of the kind that cannot be repeated in decent society. The greater freedom with which the Japanese speak of such matters as pregnancy, the bodily functions and similar subjects becomes license in these homes. As the children grow older, they come to realize more and more of what is going on around them, and the natural tendency to experiment in imitating their elders adds its quota to their knowledge. Besides this, the children of a poor man hear and see much on the street, for Japanese men, and at times women, of the lower classes speak and expose themselves in public in a way that would cause them to be arrested in an American city. Of course, the children of all classes are exposed to this sort of infection, but it is especially true of

MICHIGAN STATE NORMAL COLLEGE
TRAINING SCHOOL DEPARTMENT.

those of the poor, who are compelled to play on the streets so much of the time. In the families of the more well-to-do, the servants are often responsible for a similar poisoning of the children's minds.

This constitutes the main part of the home and street sex education of the children of families of this class. It amounts to a filling of their minds with sex ideas of a very low grade very early in life, with no attempt at guiding the children into the right ways of looking at things. The result is just what we might expect: among the poorer classes conditions that need not be described here; among those a little better off a free use of the "Yoshiwara" and its sister institutions, and among the rich concubines and "Geisha."

But if we turn from this discouraging picture and consider the other class of homes, namely, those in which the father and mother both by precept and example teach the plain, ordinary first principles of sexual morality, we find the children in far better surroundings. The parents do talk of sex and other matters which are *taboo* in the West more freely than Occidentals do, but they do it in a way that is far less offensive than in the other class of homes. When a Western man or woman meets this sort of thing first in social intercourse with the Japanese, it does not give the shock that a similar occurrence would give in America. It seems so natural that a Westerner often thinks but little of it. But such freedom gives to children a large amount of sex knowledge in an irregular way, and there is no attempt, so far as is evident, to correct this irregularly acquired knowledge by parental instruction. Fathers do not take their boys into their confidence and explain to them the dangers of secret vice or open social evils; nor do mothers explain the mysteries of their common feminine heritage to their daughters. They are simply kept from all intercourse with any member of the opposite sex from the age of puberty, or even earlier, as a precaution against any tendency to yield to their sex impulses. It is also felt by many parents that such separation of the sexes before marriage conduces to greater happiness after it. They recognize the strength of sex attraction, and feel that it will exercise its power in fuller measure upon husband and wife if neither of

them has had an opportunity to satisfy this desire for the companionship of members of the opposite sex before marriage, even in a perfectly innocent manner.

Another source of sex education in the case of children of this class is the talk and stories of nurses and other servants in the case of the well-to-do, and of playmates and street companions in the case of poorer parents. These servants are not, as a general rule, of a very high grade morally, and the stories they tell to the children of the house are hardly conducive to purity of mind and heart. Many a child of missionary parents has learned enough from such sources to make any decent mother or father shudder, and the conditions are little, if any, better in the case of the Japanese children. Of course, not all nurses and servants are of this class, and even when they are, the mothers and fathers often try to guard their children from such things. But, nevertheless, this forms an important factor in the rousing of the sex consciousness of children of both sexes.

All summed up, we may say that the children of these families grow to manhood and womanhood with little home instruction in the real secrets of sex life, but with a varying degree of irregularly obtained knowledge, sometimes of a fairly decent and respectable character, and sometimes of the filthiest description. The only positive instruction is the strict prohibition of intercourse of any kind whatsoever between the sexes, and they are given but small reason for that.

In former days it was—and to a very slight extent it now is—the custom for an elderly woman, usually an aunt or some other relative, to accompany the bride to the house of her husband for the purpose of explaining to her some of the things which she should know at that period of her life. This comes, of course, after the girl has grown to womanhood, but when it is done it must be of great value to the bride who is fortunate enough to have such a friend or relative at this critical period. The only pity is that the young man should not have similar instruction.

Turning now to the part played by the school in sex education, we come to a more definite scheme of instruction, at least for the girls. In order to be sure that my statements are not

wholly those based upon the observations of an outsider only, I shall use only such information as has been given to me by President T. Hojo of this college, one of the four schools which stand at the head of the normal school system of Japan. The only comment I care to make upon his statements is that they tally almost exactly with what I have found in talking with other men on this subject, and hence I believe they are representative of the true attitude of most Japanese educators.

In the first place, then, it is recognized that there must be some differences between the educational scheme for boys and that for girls. These are very slight in the beginning, being nothing more than a few lessons in sewing for girls and in manual training or gardening for boys, so far as the common school is concerned. But as the higher common school, or grammar grade, is reached, separate classes are more of a necessity, and at the beginning of secondary work all co-education ceases. The boys are sent to the boys' high school (or middle schools), men's normal schools, commercial schools or technical schools, while the girls enter girls' high schools or women's normals. In these schools the curricula differ rather sharply for boys and for girls, even in the same kind of school, though the basal studies are quite similar. This is because the educational authorities recognize that if a woman is to be a proper helpmate for her husband, she must be educated nearly enough in the same way to make her able to understand his work and mental activity. On the other hand, they differentiate sharply in many things, because the object of the girls' education is to make them good wives and mothers, while that of the boys is to make them able to take their places in the world of work and struggle for existence.

In these secondary schools, at least in those for girls, there is a real effort at proper sex education. When a girl in one of these schools reaches the age of perodicity, one of the older women teachers is expected to take her aside and explain to her what this new phenomenon and its accompanying soul-awakening mean. She gives the girl needed advice as to the proper care of herself during her monthly periods, as well as warning against yielding to the newly-aroused interest in boys. The girl is also told that she should carefully avoid meeting

any boy or young man unless in the presence of an older person. This is done rather informally, rather as a friend than officially as a teacher. It is left to the teacher, however, and not to the mother, as it is felt that she, at least, should be the best equipped person among the girl's acquaintances for such a duty.

But in addition to this, there is real sex teaching in the curriculum in connection with physiology. Here the girls are instructed in the rudiments of midwifery. To be sure, not a great deal can be done at this time, but the fact that there are no boys in the class makes it possible to do some really effective teaching. So the graduates of such schools go out with at least some ideas of how to care for themselves when they find themselves about to enter upon the privileges and responsibilities of motherhood.

The boys are less fortunate than their sisters at this stage of their education, for they usually receive no instruction whatever in sex matters, except the stern prohibition of all intercourse whatsoever with women of any kind. There being no legitimate way in which a boy may associate with a girl and perhaps utilize such an opportunity for wrong purposes, such a prohibition is in some ways easier of enforcement than it might be in the West. But in spite of this there are breaches of the rule, just as there are breaches of any rule which the school authorities in any land see fit to make. A first offense is usually made the occasion of a warning to the father, and failure on his part to restrain the culprit usually results in the latter's expulsion from the school.

In some few cases individual school principals invite some well-informed physician to talk to their students on the subject of their sex natures and impulses, but this is the exception rather than the rule. The ordinary boy of the secondary school of whatever kind receives no instruction in regard to sex matters, except the prohibition mentioned above.

The whole picture presents itself, then, to an outside observer in somewhat the following light: There is a good deal of "freedom of speech" on all sex matters among all classes of people as compared with our Western standards of modesty (or prudishness), and the child gets a good deal of knowl-

edge in this way. But his knowledge is not at all adapted to the needs of the case, and probably does more harm than good to his moral development. In the schools there is, for the boys, little or nothing. For the girls there is some excellent instruction, but it is imposed from above by the educational authorities, and is not given in response to a demand for such work on the part of the general public. It therefore loses some of its force by not being an outgrowth of sentiment among the mothers and fathers of the girls. Moreover, in some cases, at least, the full value and the importance and significance of such instruction are not well comprehended by those who give it. And behind and around all this is a public sentiment on questions of sex morality that leaves much to be desired.

It may be seen from this that Japan can hardly be said to have worked out as yet a thoroughgoing system of sex education as such, but is rather just beginning to awaken to the necessity of doing something to guide her boys and girls in this matter. Everywhere among Japanese educators there is real thinking going on about the problem, and soon we may expect to find something done, though there is as yet no open movement in this direction. But that the people are being made aware of the results of this neglect in the increase of the social evil and its attendant ills is indicated by the present agitation against the "Yoshiwara" and the whole system of licensed prostitution. It is also true that, although it is still possible for a man to be a libertine and still hold a good position in the educational world, yet such things are not as common as they once were. Within a very short time three or four men have been dismissed most summarily for such conduct. Public opinion is being aroused as never before, and sex education is only the natural pedagogical corollary of such a movement. So, though we cannot say that Japan has much to teach the world in this matter as yet, still, with her splendidly-organized educational department, we may hope that she will some day work out a system that will be a real contribution to the educational knowledge of all nations.

PROBLEMS IN THE EXPERIMENTAL PEDAGOGY OF DRAWING.

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This article presents a consideration of five problems of importance in the teaching of drawing in elementary schools, prefaced by a statement regarding the significance of drawing as a type of analysis and synthesis of visual impressions.

A popular idea, now decreasing in prevalence, regards drawing as a literal representation of visual impressions. The excellence of the result is measured by the impartial exactness of the record. The ability to produce good results is supposed to be, in part, a matter of training, but to depend mainly upon native talent, and this talent is regarded as an inherent possession working by intuition. In cases where this talent does not exist, the teaching of drawing has often been regarded as of little value. On the other hand, educators in their attempt to appraise drawing from a pedagogical standpoint acknowledge the existence of special talent in drawing, but accord it the same recognition in drawing as in other subjects, for example, in language or in mathematics. They see that the confident directness of approach to the material and the facility in representing it, which are usually attributed to innate ability of a technical sort, are often the outcome of well-defined interest in some phase of the subject-matter involved and a corresponding desire to express what appeals. It can be shown that when a moderate amount of technical training has made the pencil a not wholly unfamiliar instrument, the introduction of a definite intellectual interest will often result in clearness and facility of expression on the part of one who has only ordinary graphic ability.

For example, a child of average training asked to draw the leaf bud of a beech without any previous study of the content of the material may be at a loss how to proceed, or may make a conventional analysis of his sensations and produce something in general shape like the specimen. The awakening of a specific interest as to the manner in which the scales enfold the young leaves will often remove hesitation and furnish the means of isolating and recording the pertinent items.

Any object presents a multitude of aspects which form in the mind an associated group. Not all of these aspects admit of graphic representation. Therefore, strictly speaking, there is no such thing as drawing an object. A special interest in some particular phase which lends itself to expression in pictorial or diagrammatic terms is necessary to furnish the clue to a selection of terms capable of embodying that interest.

How greatly a representation made by a skilled draughtsman, conscientious in his regard for facts, differs from an impartial record of all the visual sensations of light and dark involved may be seen if a drawing made from an object is compared with a photograph taken from the same object. The selective effect of the draughtsman's interests is evident in emphasis, often unconscious, of certain facts and the neglect of others. In modeling, if anywhere, impartial reproduction of facts of form might be expected, since in the medium of clay no necessity exists for the conventions attendant upon translating three dimensions into terms of two, as in drawing. However, comparison of a modeled representation with a cast taken directly from the object makes evident the great number of details which the mind wholly or partially ignores in forming its idea of the object. Indeed, certain details sometimes remain unseen till set forth by the impersonal mechanical reproduction.

Instances of the fact that drawing tends inevitably to become an interpretation of interests rather than an indiscriminate representation of sensations are discovered when one compares the art products of different nations. The objective material may be the same, but various national conventions are evident in the representation. An impressive illustration is found in comparing Oriental with Occidental art. The

Oriental, before his acquaintance with the West, appears not to be influenced by some effects which are prominent in Occidental art, for example, naturalistic effects of solidity and of illumination and shadow. He, however, searches out with great discrimination certain harmonious relations of line and of light and dark and of color, and makes these the leading pictorial elements. So widely do the dominating aesthetic interests of the East in objective phenomena differ from those of the West that frequently its art is unintelligible to an Occidental upon first acquaintance, while, after a somewhat intimate study of Oriental art, external nature takes on new and absorbing attractions in the light of the interpretations presented.

The foregoing considerations imply that drawing is a unique type of analysis and synthesis of visual sensations generally undertaken under the guidance of a specific interest which gives significance to certain impressions and allows others to be ignored.

Observation of actual schoolroom conditions seems to indicate that, while the pedagogical value of drawing apart from any consideration of special talent has received very general intellectual recognition, the tradition regarding hereditary ability still exerts a surprisingly strong influence in determining the attitude of grade teachers toward the subject.

Most available arguments on this topic are in the form of opinions. A series of concrete experiments which should discover what are the various aspects of objects and the kinds of expression which call forth the interest of so-called talented children, by a comparison of these with the drawings of children of average ability and of less than average ability, and should make a study of the effects of the introduction of definite intellectual interests of such a sort that because of them the drawing became a record of specified facts, would furnish helpful material regarding the relation of natural to acquired ability to draw.

The most obvious interests are generally those involved in the use of drawing as illustration in connection with other subjects. There is abundant opportunity, however, to present

the conventional pictorial problems in such a way as to call for keen intellectual analysis of the material, and thus define the method of approach for the student. For example, the representation of light and shade is a common school problem in upper grades and high schools. The student whose interest in what he sees is not primarily pictorial is likely soon to weary of this problem if it means only the study of studio material in ordinary classroom light. It is then an isolated topic instead of an introduction to the whole matter of illumination and contrasting gloom as an important source of aesthetic experience. A careful study of an object in subdued light and the same object in full sunlight, a comparison of the sharp contrast in the latter case, with the more subtile gradations in the former, a critical study of the edges of shades compared with those of shadows and of the changes in shadows as they fall through varying distances before striking the receiving plane, a comparison of the effects of both subdued and brilliant illumination with the shadowless interpretations of Oriental and of purely decorative art, introduce definitely formulated interests to supplement the somewhat vague appeal of the conventional problem.

The first problem, as stated in the following questions, proposes a study of the influence of particular interests upon children's ability to draw.

Problem I. Does special talent in drawing as observed in elementary schools consist in an inherent facility of expression or primarily in unusual interests in certain aspects of material, usually the pictorial, which lead to facility of expression because of the definiteness of the interests? Will the introduction of emphasis upon other aspects related to the interests of children who do not care primarily for the pictorial, furnish a motive for analysis and synthesis which will compensate to a degree for the lack of pictorial or aesthetic interests, and consequently result in drawings comparable in force of expression to, although differing in style from, the drawings of talented children?

Any tests will probably be more conclusive in upper than in primary grades for reasons stated later. The subject-matter selected should, of course, be the same for each class, and be

such as may readily be associated with definite current interests other than those involved in the technique of representation. The tests should be made with classes of the same grade and general ability, which include some children who have the so-called especial talent usually evident in two or three members of every school, *i. e.*, the children who produce good results when the object to be drawn is presented with emphasis upon no other interest than that which is awakened by the attempt to represent it. The method should involve on the part of one class drawing which attends to technical matters related to rendering facts of appearance. In the case of the other class, interests other than the technique of expression should be introduced, which make the drawing a means of recording observations of a limited range of specific facts. Certain topics of the other school work or some outside occupation will readily suggest lines along which specific interests may be introduced. The almost universal interest of children in nature, both plant and animal, make nature forms excellent material for such tests. The forms as such possess attractive features which make an appeal apart from practical associated activities. On the other hand, the school garden may lend particular interest to a series of drawings, *e. g.*, those showing the progress in the development of the leaves of seedlings from day to day. Autumn nature study regarding distribution of seeds gives meaning to drawings which make a careful comparison of shapes and structure, for example, of the wings of two varieties of seeds, such as maple and ash seeds. Animal forms present other avenues of approach well adapted to this problem. A method of introducing constructive interests in connection with drawing is described under Problem II, and would serve well for this test.

Comparison should be made as to the relative progress and its specific manifestations in the cases—

1. Of the talented children with those who have only ordinary ability in each class.
2. Of the talented children in one class with those in the other.
3. Of the children of ordinary ability in one class with those in the other.

In addition, a study of those aspects of objects which children of special talent spontaneously depict with most pleasure would probably contribute much toward a definition of what constitute the most common aesthetic interests as compared with scientific, constructive or other interests in the visible world.

The reason for recommending this test for upper grades rather than for primary grades is because particular intellectual interests appear to be more clearly defined in older than in younger children.

The mere delineation of familiar forms possesses a vital interest for little children. One who observes the delight of young children as they watch rapid and skilful sketching, for example, in outline, of objects which interest them, such as animals, hesitates to attribute that delight merely to recognition of the forms unless the term recognition is given a wide interpretation. An actual squirrel, for instance, furnishes a multitude of impressions, and, like most objects, has entered into consciousness in an illy-defined manner. Well-defined outline is only one of the impressions very imperfectly suggested by the object. To perfect and set forth clearly the logical outcome of this one suggestion of outline involve a high degree of mental effort in the way of analysis and synthesis.

A child in watching the production of a drawing sees related items being rapidly isolated from the mass of his partially assimilated sensations which the object has previously awakened and presented in one fairly perfected interpretation; one of an indefinite number of possible interpretations, but of its kind complete and coherent. A mental satisfaction and relief appear to accompany this clarification. From the more detailed intellectual grasp afforded by the new method of anlysis and synthesis there arises a heightened sense of reality comparable to that which comes when the desire to grasp a newly-perceived object with the hands and thus to assimilate it more completely into experience is satisfied.

After seeing rapid, skilful outline drawing, children generally desire immediately to draw the same things, and thus make the new interpretation their own, as children while learn-

ing to talk repeat new words. Under the stimulation of the moment they will usually reproduce the drawings remarkably well. Such reproduction of work which they have just seen done has a different effect than the copying of printed examples. There is a motor stimulation resulting from the sympathetic response of the children to the movements of the draughtsman.

A valuable contribution would be the outcome of tests which should determine whether this early and general interest in comprehending the visual aspects of form as such, and in making things appear to re-exist in drawings, persists in the case of children who have what is called special talent, but becomes secondary to practical interests in other cases.

A statement is often made by teachers of constructive work in high schools that children who come to their classes from elementary schools are usually unable to draw a piece of construction, either from the object or as an experimental sketch to show how a proposed object will appear, and cannot produce a representation that appears to be well constructed and to exist convincingly in three dimensions. In many schools the facts justify this criticism of the drawing. Most elementary courses in drawing undertake during the last two years, if not earlier, to teach the perspective of rectangular and curvilinear objects. A solution of the following problem will contribute to the effectiveness of such courses.

Problem II. In learning to represent constructed objects involving common geometric shapes, what is the specific contribution of each of the following methods?

(a) Drawing directly from objects and making corrections on a basis of observation.
(b) Theoretical study of perspective principles.
(c) Developing concepts of solidity of such a sort that representations of constructed forms can be built up from imagination when the objects are not present.

An experiment bearing on point C was tried with a group of pupils of an eighth grade working one hour twice a week for a month. These children were asked at first to draw a book lying on a desk in front of them, and a chair standing at a little distance. In each case the book was represented insufficiently

foreshortened. In the words of the children, it did not lie flat enough. In the case of the chair, the large number of lines proved confusing.

The children were then given three structural lines of a rectangular solid (Fig, 1, a) and added the other visible edges, so they appeared to be consistent with these. They then experimented with forms constructed upon variations of the angle formed by 2 and 3 to discover the effect of modifications of this angle upon the apparent position of the object and the limit of variation beyond which it was impossible to produce the effect of a rectangular solid (Fig. 1, b). This experiment was followed by another drawing of a book. This later drawing indicated a marked increase of ability to represent the object as lying flat.

Two facts were concretely emphasized as a result of this work—first, that a determination of the direction of three converging edges of a rectangular solid decided the position in which the object would appear in the finished drawing; second, that the lines representing these three edges determined the direction of all the other lines. If the object appeared distorted, it was necessary only to discover what line failed to follow a direction apparently parallel to its key line and to change it so it should be consistent with that line.

Persistent practice in completing drawings of rectangular solids upon three given lines was necessary through portions of three periods in order to eliminate distortions, especially of the upper face. The pupils were led to regard the representation as a solid of wood, the edges of which they were to square to the given lines.

Later the completed drawings of solids were cut pictorially into various forms, the lines of section being suggested by chalk lines upon a box. Combinations of rectangular solids were also suggested and drawn (Fig. 2, a).

One pupil, slow in drawing, but quick in problems involving reasoning processes, was awakened to keen interest by the discovery that complex modifications of shape could be drawn with an absolute assurance that the resulting appearance would correctly represent the structure if the sequence of the first three key lines were consistently followed. His drawing from

FIG 1

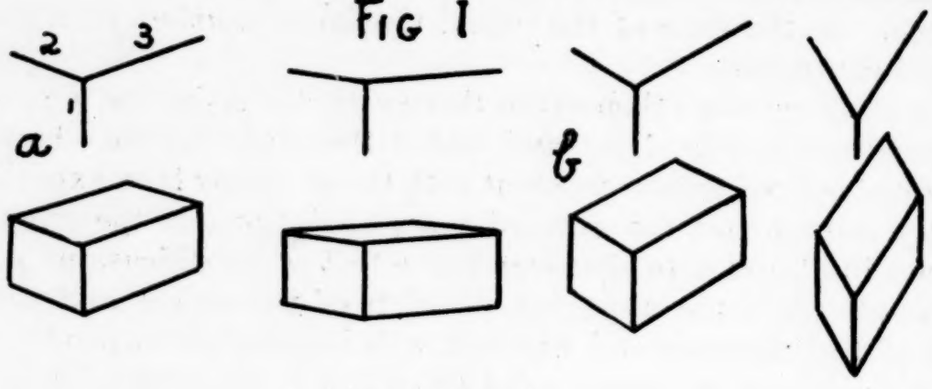
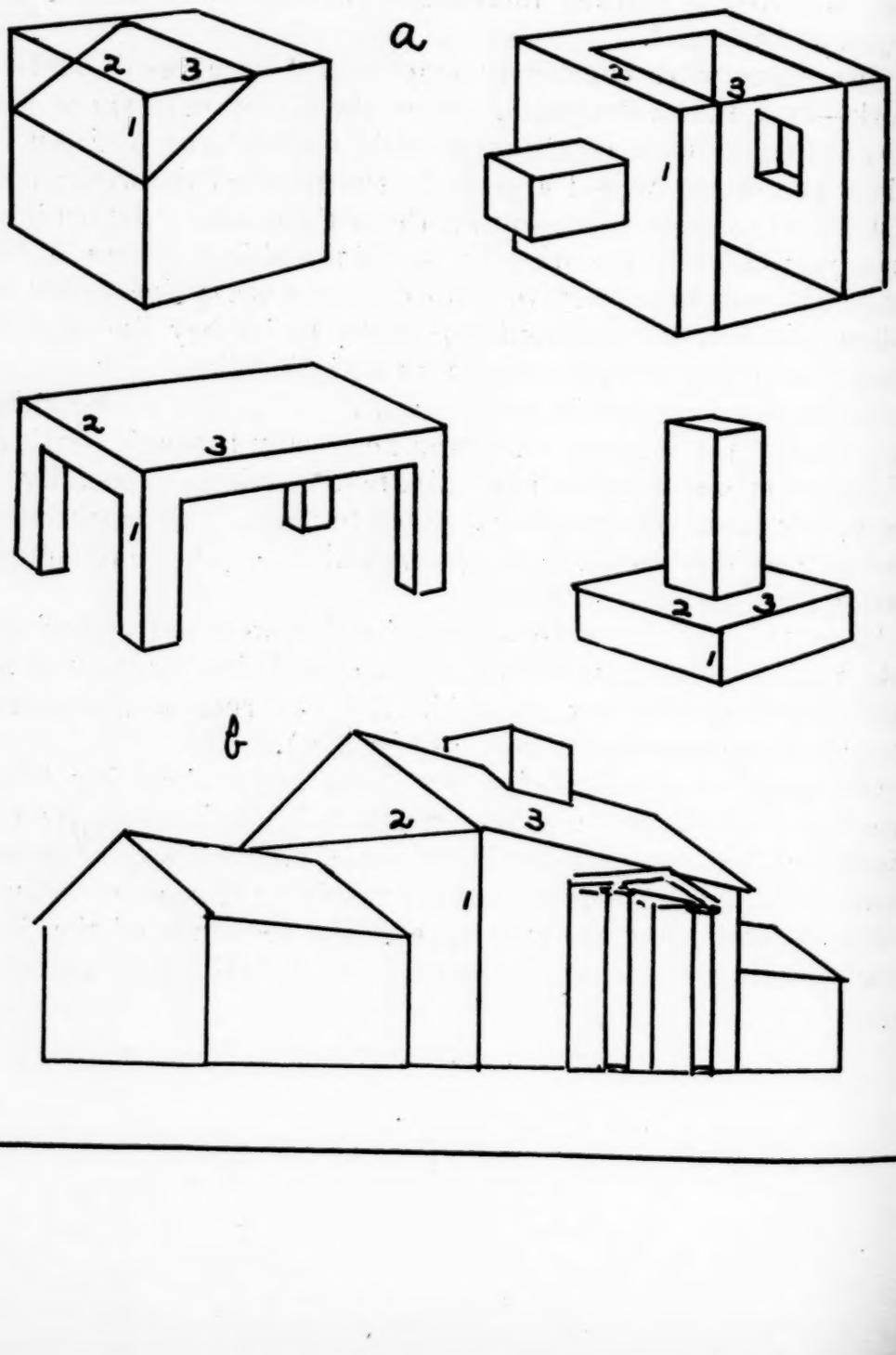


FIG 2.



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imagination was thereafter usually confident and accurate, and to a great degree this was true of his drawing from objects.

Toward the end of the lessons, practice was given in relating to the three key lines the other outlines of a rectangular oblong with more deliberate care than at first, so that the resulting drawing was a completely satisfactory representation of rectangular faces at an angle. This was done with large figures on the board, as well as with smaller drawings on paper. The sole test as to correctness was in the visual satisfaction produced by the result. In drawings which met this test it was found by measurements that the apparently parallel outlines of retreating planes appeared to converge in the direction of their further ends. The difference between this method of approach to perspective effects by building up concepts of solidity and the teaching of formal perspective by means of reference to distant vanishing points theoretically computed and to the position of objects relative to the level of the eye will be at once apparent. It is based upon an increasing reliability of the testimony of the eye regarding impressions supplied to it directly from the object, because of a developed concept to which to refer them rather than upon an ability to compute results from ulterior data. Further experiments might show whether such computations are of most value as a means of checking up results after visual perceptions are sufficiently developed to be fairly trustworthy, or whether they should accompany and reinforce the method based on constructive imagination, or whether they demand a more mature form of mental activity which should be postponed to the high school.

It was found comparatively easy to pass to the construction in graphic terms of objects so large that, while the upper outline extending to the right or left appeared to slant downward, the lower line in the same sequence appeared to slant upward, thus necessitating a compromise in the case of intermediate lines (Fig. 2, b). The work upon this phase was brief, however, and carried on only with the two or three who completed the other drawings rapidly. At the close the pupils again drew a book and a chair.

The following results were apparent:

1. A definite method of procedure in drawing a rectangular solid; for example, in the case of the chair, a selection and

careful delineation of three or four controlling lines and the reference of all others to these.

2. Ability to judge readily regarding the correctness of a representation of a rectangular plane in a foreshortened position from the immediate visual impression before appealing to the intellectual verification of perspective theories.

3. Ability to draw with some degree of confidence from imagination somewhat complex combinations of rectangular solids, adding to the forms or modifying them by sections at will as a result of practice in thinking in three dimensions while expressing in terms of two.

Methods for testing the following problems will easily suggest themselves:

Problem III. Most children without outside suggestion tend to make from objects drawings smaller than those desired by the instructor, especially if the object is not of great size or is not in the immediate foreground.

Is there a psychological reason for the size of drawing which a child naturally makes if he follows his own tendencies, uninfluenced by outside suggestions, and does this size bear any definitely ascertainable relation to the size of the image produced upon the retina?

A standard for comparison in any given case may be found in the size which would result if a tracing of the object were made upon a plane between the eye and the object, so placed as to intersect the visual cone at right angles at the same distance from the eye as is the paper when the drawing is being made. Under these conditions if the paper, by a radius equal to its distance from the eye describes an arc from its position at the time the drawing was made to one between the eye and the object, it may there be made to coincide with the plane just referred to, and given points on the drawing, if it be correct, will intersect rays from corresponding points of the object to the eye.

In making a drawing which fulfils these dimensional conditions, no necessity arises for translating into a different visual scale the impression received from the object. This direct method of representation has been well described by Dr. Denman W. Ross of Harvard University as drawing "after the

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manner of tracing." The method technically termed "blocking in," which consists in surveying and mapping out the structure of a drawing, so that the size, regardless of any relation to the dimensions of the visual image, shall suit a given space and conform to an arbitrarily imposed scale of size before details of representation are attempted involves more complex and indirect processes.

If experiments show that children tend naturally to approximate the scale of their drawing to that of the visual image, the "blocking in" method would seem to be more appropriate for advanced students than for beginners.

Problem IV. What particular habits of analysis of impressions are developed by making rapid sketches limited to a brief time as compared with those which come from making carefully-finished drawings, for which practically unlimited time is allowed? What should be the relation between these two methods? Does training in one give ability to perform the other? What additional forms of expression are developed by memory-drawing?

Problem V. What contribution does each of the following methods make toward promoting the ability of children in primary grades to draw?

(a) Detailed observation of objects and comparison of the drawings with the object.
(b) Study of pictures, including copying or tracing.
(c) Modeling in plastic material.
(d) Seeing a skilful draughtsman draw the object under consideration.
(e) Memory-drawing.

A somewhat careful experiment along this line was carried on with his own child, of about eight years of age, by a graduate student of the School of Education, to determine, if possible, which of certain stimuli exerted the strongest influence upon his drawing. The boy first drew "out of his head" the following objects: a house, boat, bird, tree, horse, man, steamboat, delivery wagon, automobile. He next drew from particular examples of these objects; for instance, the house across the street, a toy boat, a stuffed bird, etc. Records were kept of the order of procedure and of the comments of the

child in six cases as a basis for more detailed comparison of the two ways of drawing.

The effect of different stimuli upon the representations of the same object was then tried in four cases. For instance, after the bird had been drawn from imagination and from the object, it was modeled from the object, and after the interval of a day drawn again. A drawing of the bird was made for the child. Later he copied and then traced and still later cut out with scissors a picture of that kind of bird. After each study a drawing was made from memory, and the items added by each step were noted.

Obviously, the study of a single case under special conditions offers little that is conclusive regarding regular school work. The following facts, however, are not without significance:

1. Of all the stimuli tested, seeing some one draw appeared to exert the strongest influence.
2. At this age observation of the object during the period of drawing appeared to play an unimportant part in influencing the result.
3. Modeling the object sometimes appeared to produce a definite retrogression in the drawing immediately following. This seemed to be due to the fact that in modeling an object, for example, a toy boat or a cart, the details, as masts, rudder, flag, wheels, etc., could not be represented in plastic material with the same freedom as with a pencil, and the impression left by the restriction of material was sufficiently persistent to be evident in the following drawing. This casts no reflections upon the educational value of modeling, but merely enforces the view that its chief value during primary years lies in the fact that it furnishes another method of analysis of material.

Some of the problems connected with drawing lend themselves to fairly complete solution by ordinary laboratory methods, as, for example, does Problem III of this article. Others offer the prospect of results less satisfactory to the investigator. Yet they are of importance in the teaching of the subject, and to the degree to which they can be submitted to critical study will the vagueness with which they are now surrounded be removed.

A TENTATIVE REVISION AND EXTENSION OF THE BINET-SIMON MEASURING SCALE OF INTELLIGENCE.

Part III. Summary and Criticisms.

LEWIS M. TERMAN AND H. G. CHILDS.

Leland Stanford University.

It is evident from the results of our investigation that the Binet scale requires a radical revision to make it at all suitable to conditions in this country. We wish to submit as a basis for further work the following series of tests, which is based chiefly upon the tables of results presented in the preceding articles of this series, but partly upon the results secured by Bobertag and by Binet in 1911. Although we realize that no series of tests can claim more than a rough approximation to accuracy until it has been given a painstaking try-out with many hundreds of children under widely-varying conditions of culture and training, we believe, nevertheless, that the series here offered will prove a more serviceable basis for further exploration than either the 1908 or 1911 series of Binet. *At the same time, the frankly tentative nature of our revision should be remembered.*

Revised Scale.

N. B.—Examiner should check all items separately.

Year III (unit value .1666).

1. a. "What's the thing to do when you feel sleepy?"
   b. "What's the thing to do when you feel cold?"
   (Both must be passed.)
2. Weights:—3-12 . . . 6-15 . . . 3-12. (Two out of three.)
3. Naming objects: key . . . closed knife . . . penny . . . (no failure).
4. Knows sex.
5. Repeats three digits: 641 . . . 352 . . . 783 . . . (Two successes.)
6. Pictures (enumerates) 1 . . . 2 . . . 3 . . .

YEAR IV (unit value .2).

1. Copies square.
2. Counts four pennies.
3. Divided rectangle.
4. Chooses prettier: 1 . . . 2 . . . 3 . . . (must be no failure).
5. Defines (use): a table . . . a chair . . . a horse . . . a mamma . . . (three out of four).

YEAR V (unit value .2).

1. Morning or afternoon.
2. Names colors: red . . . yellow . . . blue . . . green . . . (no failure).
3. Puts key on chair, brings box, shuts door.
4. Vocabulary index (score?). (See third article of this series.)
5. Repeats: a. "We expect to have a great time down at the seashore."
   b. "When the train passes, the engineer will blow the whistle."
   c. "Why should anyone want to harm a beautiful bird?"
   (One success out of three.)

YEAR VI (unit value .1666).

1. Right hand, left ear.
2. Number of fingers.
3. Counts thirteen pennies.
4. Repeats: 4739 . . . 2854 . . . 7261 . . . (Two out of three.)
5. a. "What's the thing to do if it's raining when you start to school?"
   b. "What's the thing to do if you have missed a train?"
   c. "What's the thing to do if you find that your house is on fire?" (Two out of three.)
6. Vocabulary index 12 per cent. (2160).

YEAR VII (unit value .1666).

1. Copies diamond.
2. Omissions from pictures: 1 . . . 2 . . . 3 . . . 4 . . . (Three out of four.)
3. Names: penny . . . nickel . . . dime . . . quarter . . . (No failure.)
4. Pictures (describes): 1 . . . 2 . . . 3 . . . (Two out of three.)
5. Vocabulary index 14 per cent. (2520).
6. Repeats sentences 14 to 16 syllables:
   a. "We will go out for a long walk. Please give me that pretty straw hat."
   b. "We are having a fine time. We found a mouse in the trap."
   c. "Brother Frank had a fine time on his vacation. He went fishing every day." (One out of three.)

YEAR VIII (unit value .1666).

1. Writes from dictation: "The pretty little girl."
2. Compares: butterfly—fly; wood—glass; paper—cloth. (Two out of three.)
3. Counts 20 to 0 (twenty seconds).
4. Ball and field (score 2). (See third article in this series.)
5. Repeats: 31759 . . . 42385 . . . 98176 . . . (Two out of three.)
6. Vocabulary index 18 per cent. (3240).

YEAR IX (unit value .125).

1. Value of stamps: 111222.
2. Names date.
3. Reading for four memories. Time . . .
4. Weights, 3—6—9—12—15. Trial 1 . . . 2 . . . 3 . . .
5. Fifty words in two minutes.
6. a. "What's the thing to do when you have been struck by a playmate who did not do it purposely?"
   b. "What's the thing to do when you have broken something which does not belong to you?"
   c. "What's the thing to do when you have been detained so that you are in danger of being late for school?" (Two successes out of three.)
7. Vocabulary index 23 per cent. (4140).
8. Completion test (score . . .). (See third article in this series.)

YEAR X (unit value .125).

1. Copies designs: 1 . . . 2 . . . (See Binet 1911 series.)
2. Three words in one sentence.
3. Six digits: 374859 . . . 825746 . . . 762953 . . . (Two out of three correct.)
4. Ball and field (score 3).
5. Vocabulary index 26 per cent. (4680).
6. Fables 1 . . . 2 . . . 3 . . . 4 . . . (See second article in this series.)
7. Completion test (score 20).
8. Makes change (25c., 4c.).

YEAR XI (unit value .1666).

1. Arithmetical reasoning (score ?). (Using the following problems taken from Bonser's "Reasoning Ability of Children in the Fourth, Fifth and Sixth Grades," page 2. The child is given the problems in the following form, and is asked to write the answer after each problem, making no other figures:)
   (a) If three-quarters of a gallon of oil costs 9 cents, what will 7 gallons cost?
   (b) At 15 cents a yard, how much will 7 feet of cloth cost?
   (c) A man whose salary is $20 a week spends $14 a week. In how many weeks can he save $300?
   (d) How many pencils can you buy for 50 cents at the rate of 2 for 5 cents?
   (e) A man spent two-thirds of his money and had $8 left. How much had he at first?
2. a. "What ought one to do before taking part in an important affair?"
   b. "What ought you to say if someone asks your opinion about a person you only know a little?"
   c. "Why ought we to judge a person more by his acts than by his words?"
   d. "Why do we excuse a wrong act committed in anger more readily than a wrong act committed without anger?" (Three out of four correct.)
3. Vocabulary index 30 per cent. (5400).
4. Fables: 1 . . . 2 . . . 3 . . . 4 . . .
5. Completion test (score 25).
6. Sees the point in following samples of wit and humor. E reads each passage and asks S "What is the point of that joke?" "What is funny about that?" etc.

(a) A man called at the postoffice to inquire if there was a letter for him. "What is your name?" said the postmaster? "Sure," said the man, "you'll find my name *on the back of the letter.*"

(b) A woman was once told of a man who had twice had smallpox and had died of it. "Did he die the first time or the second?" the woman asked.

(c) A young fellow who wanted to be witty once said to a barber, "Did you ever shave a monkey?" "Why, no, sir," said the barber; "but if you will please sit down, I will try."

(d) A religious old lady used to say that God was very good to make the greatest rivers flow past the largest cities.

(e) A peddler in his cart overtook another peddler on the road and thus addressed him, "Hallo, what do you carry?" "Drugs and medicines," the other replied. "Go ahead, then," said the first; "I carry gravestones."

(Three out of five satisfactory.)

YEAR XII (unit value .1666).

1. Absurdities, as follows:
   (a) An unfortunate bicycle rider broke his head from a fall and died instantly. He was picked up and carried to a hospital, and they do not think he will recover.
   (b) I have three brothers—Paul, Ernest and myself.
   (c) There was a railroad accident yesterday, but it was not serious. The number of dead is only 48.
   (d) Yesterday the police found the body of a young girl cut into 18 pieces. They believe that she killed herself.
   (e) The engineer said that the more cars he had on his train the faster he could go. (Four out of five correct.)
2. Disarranged sentencces: 1 . . . 2 . . . 3 . . .
3. Reading for seven memories . . . (Time . . .)
4. Suggestion. (See Binet, 1911.)
5. Vocabulary index 36 per cent. (6480).
6. Repeats 26 syllables (one out of three correct).
   a. "My little children, you must work very hard for a living. You must go every morning to your school."
   b. "The other day I saw in the street a pretty yellow dog. Little Bessie has spots on her new apron."
   c. "Ernest is often punished for his bad conduct. I bought at the store a pretty doll for my little sister."

YEAR XIII (unit value .1666).

1. Seven digits: 2183439 . . . 9728473 . . . 3247196 . . . (Two out of three correct.)
2. Vocabulary index 42 per cent. (7560).
3. Fables: 1 . . . 2 . . . 3 . . . 4 . . .
4. Arithmetical reasoning (score? . . .).
5. Completion test (score 36).
6. Preblems of fact, as follows (two out of three):
   (a) My neighbor has been having queer visitors—first a doctor, then a lawyer, then a priest. What's happening at my neighbor's?
   (b) An Indian coming to town for the first time watched a white man riding along the street. As the white man rode by, the Indian said: "White man lazy; him walk sitting down." What was the white man sitting on?

(c) A man who was walking in the woods near a city stopped suddenly, very much frightened, and ran to the nearest policeman, saying that he had just seen, hanging from the limb of a tree, a ———.

YEAR XV (unit value .1666).

1. Fables (score ? . . .).
2. Changes hands of clock (4 minutes to 3 o'clock). (Must be able to recognize the slight discrepancy).
3. Pictures (interprets) 1 . . . 2 . . . 3 . . . (Two out of three.)
4. Vocabulary index (score ? . . .).
5. Completion test (score ? . . .).
6. Uses code (See Goddard's article, "The Training School," May, 1911).

ADULT.

1. Reversed triangle.
2. President and King. (See Goddard's article cited above.)
3. Ball and field (score 4, with conditions stated).
4. Completion test (score ? . . .).
5. Gives sense of selection (see Binet, 1911).

"One hears very different judgments about the value of life. Some say it is good; others say it is bad. It would be more correct to say that it is mediocre, because, on the one hand, it brings us less happiness than we want, while, on the other hand, the misfortunes it brings are less than others wish for us. It is the mediocrity of life that makes it endurable, or, still more, that keeps it from being positively unjust."

Some of the Binet tests which we found were especially dependent on training, and which came at years already crowded with more suitable tests were omitted. Reading for two memories, 8th year, was omitted because but 65 per cent. passed it with no time limit; furthermore, the difficulty here was not one of memory, but of the mechanics of reading, which is purely a matter of training. Definitions of abstract terms in the eleventh year and differences in meaning of abstract terms in the thirteenth year did not give satisfactory results at any age, and furthermore, the vocabulary test is of much greater value and can replace them. Questions of comprehension in Binet's fifth year we would place before the fourth year. This test probably belongs in the third year.

In general, we have considered that two-thirds of the children of any age ought to pass a test to make the test characteristic of that age. Where the number passing at a given year is just at or below two-thirds and the following year there was a growth in ability, we have ordinarily fixed on the latter year as the more characteristic. Where for two or three years

there is but little change in ability we have generally chosen the earlier of these years as characteristic, even though not quite two-thirds passed, especially when there had been a sharp rise in ability from the year before. In two or three instances we have placed a test where less than 60 per cent. passed; once where it seemed our method of applying the test had been at fault, and in two other cases where our data were rather limited and we believed that the particular group in question had suffered some slight adverse selection.

The above tentative revision has made the lower end of the scale more difficult by setting back many of the tests of Binet's higher years, and the upper range has been supplemented, rearranged, and some of the tests even discarded. As no three-year children were included in our tests, we cannot offer our third and fourth-year tests with assurance that they are all correctly placed; it is possible that three-year-olds would pass some of the fourth-year tests. We are sure that normal four-year-olds can pass them, and that they do not belong to later years, where many of them were placed by Binet.

Believing that tests of memory, vocabulary, observation, reasoning and reaction to a complex social or moral situation bring out fundamental characteristics of mental ability, we have given a well-scattered range of tests on memory, questions of comprehension, reasoning, tests involving observation, linguistic invention and association (such as the completion test and rearranging a sentence of mixed words, vocabulary, etc.), so that a child of any age will be tested on a number of these important questions. Especially satisfactory also are such tests as description of pictures, omissions from pictures, aesthetic judgment, comparison of things from memory and the naming of words. They depend relatively little on formal training, can be arranged to show definite progress and require responses to complex situations that bring out what we really desire to get at. Tests of comprehension, vocabulary, practical judgment and ability to generalize seem especially desirable. The naming of words is interesting in that it brings out the difference between the type of mind that thinks only in terms of concrete, present objects and the mind that can deal with things not present. One S names objects which he sees

lying about the room; another names things from his past experience and according to logical sequence. This test also throws light upon the S's mental self-control. One child plunges in so precipitously that his stock of thoughts is exhausted in a half minute, and he is unable to collect himself again; another starts in calmly, maintains his composure all through the test and makes a very creditable record.

A detailed criticism of the individual tests is reserved until data shall have been secured from the application of the revised scale upon about 1000 non-selected children. This work, made possible by the kind co-operation of several psychologists in various parts of the country, is now in progress.

In this connection it may be said that the tests in general are significant not so much for displaying the child's intelligence in its entirety as for detecting that type of mind which is not capable of profiting from its social environment. A failure on any one of these tests has but little significance, but if a child of 12 or 14, or even younger (as we have found in several cases), is unable to name the months, make change, remember five digits, define better than by use or read a simple selection and give two memories, these facts collectively show that something is lacking in his mental make-up, and often give clues as to the source of trouble. This is illustrated by Fig. II, in which the central line represents age norms on the scale and each of the various crosses to the left the starting point for a serially-graded test. The figure pictures the results secured by applying the test to a 12-year-old who is two years retarded in every respect, the dotted lines extending to the age norm which ought to be reached, the unbroken line to the age norm which is actually attained. The unbroken lines will not usually cross the central line at the same point, but when they show similar divergent tendencies from their dotted companions, the presumption is very strong that we are dealing with a case of greater or less mental deficiency. If thorough investigation of the pupil's home life, health record and educational advantages discloses no sufficient cause for the retardation, the presumption becomes very strong, indeed. There is, however, still the possibility that the condition may be one of temporary retardation rather than of permanent

deficiency. The pupil may be only 10 years old physiologically, though 12 chronologically, and if so, the prognosis is not necessarily unfavorable. In such a case the pupil may finally attain a normal, if late, maturity.

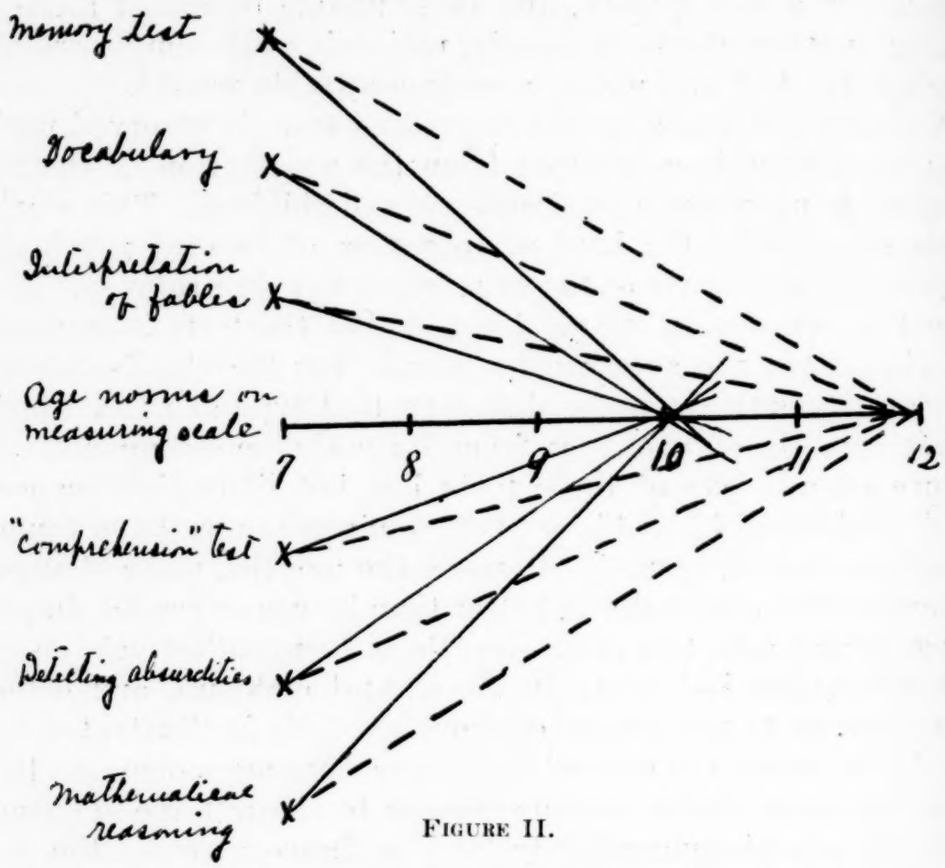

FIGURE II.

In order to make the tests of the greatest practical use, it may prove desirable to apply along with the measuring scale of intelligence the newly-developed tests of physiological age. Unless this is done, it is conceivable that some children will be misjudged as to native ability, a mistake which in individual cases might have very serious consequences. In justice to the child the normality of whose intelligence has been questioned, tests for physiological age should always be applied before institutional treatment is recommended, and perhaps occasionally after commitment.

Another important means of rendering the diagnosis more certain would be to apply tests of ability to learn. If 100 14-year-old boys are running the mile race, their relative posi-

tions at the end of two minutes are not a reliable indication of their individual differences in native ability to run. Some may be crippled, some fatigued from previous exertion, some in training, some raw. If all were put through a standard course of training of sufficient length and under controlled conditions, the differences still remaining would represent, approximately, their difference in endowment in this capacity. We have no standardized norms of ability to learn, except the rough ones offered by a graded school curriculum. Failure to meet the school standard satisfactorily creates a suspicion of sub-normality, and usually not unjustly. But experience proves that this test is not wholly reliable. Some children fail to progress in school for other reasons than real inability to learn. We are in urgent need of supplementary tests of learning ability of such a nature that they will not fail to enlist the child's greatest effort.

Assigning Credit.

Binet's original method of assigning credit was faulty in not giving equal value to the different year groups. The method he proposes in the 1911 article avoids this difficulty by equalizing the number of tests for the different years. This arbitrary limitation of the number of tests per year is, however, an unnecessary stricture. We submit another plan, which avoids the difficulty above mentioned; which gives credit for every test passed, discarding no results because they are only a fractional part of the year or half-year unit; which gives partial credit where it seems to be deserved, and which gives a final result more convenient for statistical treatment.

Inasmuch as the number of tests in each year is not the same, no one number has any special value over any other as a unit of value for a year group. Whatever number may be chosen as the year unit, it should be divided by the number of tests in any year to determine the unit value of each test of that year. For sake of convenience, we suggest that 1 be taken as the value of any year group. Accordingly, dividing 1 by the number of tests in any year gives us the unit value of each test in that year. In reckoning an S's total performance add

in, at its unit value, each test passed and add .5 or a half year. (The necessity for adding a half year's credit is due to the method of age grouping which has been employed, and has been explained in full on page 68 of the February number.) In reckoning we count from the first year instead of from the third, disregarding the fact that tests for one and two years have not been agreed upon. To illustrate the procedure, let us suppose that an S has passed tests the sum total of whose value is 8.2. Add the value of half a year and we have 8.7, or a test age for this S of 8.7 years. Half credit may be allowed where the performance seems to make it desirable.

An S should be required to begin as low in the scale as necessary to insure that he is not given credit for what he cannot do, but, of course, should be given full credit below the point where he is started, counting the first and second years. The tests should always continue until there is not even a remote possibility of the S winning further credit. Where these rules regarding desirable range of testing are not observed we can never be sure of the reliability of the norms so established. To make such a thorough-going try-out requires much time and patience. We would repeat that wholesale application of the tests, using but a few minutes of time and a range of but two or three year-groups for each child, can never give us the standard norms we need, and will only serve in the end to bring discredit upon all efforts in this important field.

In spite of the numerous imperfections and inadequacies of the Binet scale above mentioned, our experience in the work of applying it has given us a most favorable opinion of the practical value of such a series when it has been refined and extended, an impression which grows upon us as the work continues. By its use it is possible for the clinical psychologist to submit, after a 40-minute diagnostication, a more reliable estimate of a child's intelligence in relation to normal children of his age than most teachers can offer after a year of daily contact. Since all human estimations are relative to some standard, the teacher has no means of discovering whether her class on the whole is above or below the normal for the corresponding age. Her standard may be too high or too low, vague, mechanical or fragmentary. We venture

the prediction that before many years it will become a matter of course to apply serial mental tests in the public schools to all pupils who are retarded, or about to become retarded, or who give indication of unusual ability. In New Jersey a recent State law makes the application of tests of mentality mandatory in the case of all school children retarded as much as three years.

The scientific management of special classes for atypical children in the public schools will be impossible until similar series of tests are multiplied indefinitely. To ascertain the full extent and qualitative nature of a case of mental retardation, together with its causes, is extremely difficult. In fact, with existent methods it is hardly possible at all. Our treatment of such cases barely transcends guesswork. May we not hope that 10 or 15 test scales will soon be devised, each more perfect than the Binet series, which, collectively, will enable the clinical psychologist in a few days to lay bare the "natural history" of a child's development; tests which will explore every line of efficiency, intellectual, volitional, motor, personal, pedagogical, social, linguistic, etc., and which will relate all these at every point to individual peculiarities of instincts and interests and to all significant incidents of his experience? Now that the individual treatment of pupils in the schools has begun, there is no stopping short of this ideal. Tests must be developed which will enable us to differentiate all degrees of intellectual ability and all kinds of intellective unevenness; others which will mark for special educational effort the pupil whose emotional equipment and volitional tendencies threaten the onset of criminality, insanity, hysteria, neurasthenia, or other of the neuroses. With the accumulation of positive experimental data on so many aspects of individual mentality, it would seem that John Stuart Mill's suggestion looking toward a science of human character, *ethology*, as he called it, is on the verge of realization. The modern studies in the psychology of testimony, suggestibility, measurements of mental growth, super- and sub-normality, submerged complexes, emotivity, psycho-analysis and association reactions offer in addition many other fascinating fields for the genetic study of personality.

A word may be added respecting criticisms which have been offered to the effect that mental tests, being only measures of a product, can have no value for psychology. This, of course, is the extreme point of view of the uncomprising structural psychologist who limits by definition the legitimate scope of the science to the study of the content of consciousness. We prefer, however, to conceive of psychology in the broadest sense as the science of behavior. In so far as the structural elements shed light upon function they are significant, but we believe they can no more usurp the entire domain of psychology than the chemistry of the bones and muscles can swallow up or displace the science of physiology.

Suggestions for Further Development.

We have considered our study only a brief preliminary step in surveying the intellectual capacities of normal children. If our tentative revision of Binet's scale has sufficient value, it should be subjected to a thorough trial upon thousands of representative children. At the same time, numerous supplementary tests should be subjected to experiment, for it cannot be supposed that the tests thus far hit upon even approach perfection. There are also wide gaps in the series where tests need to be supplied. It is especially desirable that age norms be secured for tests of the general nature of some of those used by Healy and Fernald in the Chicago Juvenile Court.

If possible, norms for many tests should be established beyond the thirteenth or fourteenth years, though the difficulties here are very serious. At this time sex differences, and probably also physiological age differences in the same sex, become much more prominent. Perhaps from the twelfth or thirteenth year it will be found necessary for practical purposes to divide the scale into two branches, one for girls, the other for boys. Even this bifurcated scale would have little value unless correlated with scales of physiological age. Again, in this range, emotional disturbances come in to invalidate our norms of intellectual performance. The sex interest, emotional control, religious upheavals, vocational

yearnings, all these and many other adolescent phenomena are sure to complicate the activities of the intellective functions. Still another difficulty in obtaining norms above 13 years is the fact that the public school, the only place where extensive experiments of this nature can be carried on, does not hold all the pupils beyond the fourteenth birthday. Where compulsory school laws actually keep all pupils in school till the fifteenth birthday, norms can be secured for 14 years, provided care is taken to get representative 14-year-olds. This cannot be done if only 14-year-old children who have not progressed to the high school are included.

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EDITORIALS.

EDUCATIONAL RESEARCH IN NORMAL SCHOOLS.

President W. J. Hawkins of the Warrensburg (Missouri) Normal School has placed himself on record as favoring an emphasis of educational research in the normal schools. In the April number of the *Western Journal of Education* he says:

> Research work can alone solve the problems in education. It is being done by the schools of education in the universities. These schools of education are grappling with the real problems in education and life that the normal schools have left wholly untouched.

It is my contention that the normal schools are now prepared to enter, and should enter this field of work. They have in their faculties men and women who are capable of undertaking such work. The states can devote the public funds to no purpose that more directly concerns the people. Everyone engaged directly or indirectly in the elementary or the secondary schools knows that much of the work is merely "marking time." * * * Educators know that there is great waste. * * * The results are deplored and criticized. The people do not know the remedy. Educators are expected to know it, but they do not. They are getting anxious to find out. The people are pushing them on to find out.

* * * To my mind, such an enlargement of the services of the state normal school is not only a possibility, but an obligation.

It is our sober conviction that President Hawkins' proposal represents an ideal that will infuse new life into the normal schools and gradually bring them to the position that they should occupy in our system of public education. We urge a more liberal financial support of normal schools for many reasons, but for none more important than that they may turn some of their available talent into the field of investigation. What can be done by a liberal infusion of the spirit of research has been abundantly demonstrated by the success of the agricultural experiment stations. Fifteen thousand dollars appropriated annually from the Federal treasury to each of the state normal schools for purposes of educational investigation would work a miracle in less than a generation. W. C. B.

DR. SHERMAN'S DEFENSE OF LATIN.

Those who attempt to defend the study of Latin in secondary schools by an ill-tempered, fanatical and irrational abuse of college professors of education (in whom, it would seem, the crime of *lese majeste* is now concentrated) would do well to study rather carefully Dr. S. P. Sherman's article, "English and the Latin Question," in the April number of *School and Home Education*. Dr. Sherman wastes neither time, energy, nor printer's ink in personal vituperation. He does not presume to call into question the experimental evidence against the validity of the dogma of formal discipline in its older form. Himself both a classical scholar and a teacher of English, he limits his remarks to a field with which he is thoroughly familiar, and in which he can speak with authority. And when he asserts that a man may as well "try to reach England without a boat as to attain proficiency in English without Latin," his statement challenges attention. But he goes beyond the mere statement: he adduces experimental evidence in its support. His colleagues who will have no commerce with the experimental method in education will doubtless brand him as an apostate. Shorey will sneer and Fite will snort; but some of the less hardened may conclude that, after all, hard facts are the most effective weapons to employ when the efficiency of one's work is being questioned; and that the best way to hammer a belief into a fact is to use a sledge of unprejudiced induction and an anvil of controlled observation. W. C. B.

SPECIAL CLASSES FOR GIFTED CHILDREN.

The movement for the establishment of special classes for children of superior ability continues to make headway, though but slowly. Harrisburg, Pennsylvania, a city equipped with a nine-year elementary course, found several years ago that, while the nine-year course presented certain advantages for the average child, there were opportunities, particularly in the second and the sixth grades, for bright children to skip grades or to do two years' work in one. By dint of extra work on the part of teachers and pupils, large numbers of bright children were promoted more rapidly than the average pupils. A recent reconstruction of the course of study, however, increased the difficulty of the work in the second and sixth grades and led to the abandonment of the fast sections in these years. To restore the opportunity for advancement to gifted pupils, Superintendent Downes arranged for the establishment in 1910 of two and in 1911 of three "special schools,"[1] much after the pattern of the "preparatory centers" in vogue at Baltimore, Worcester and Indianapolis. The results have been most gratifying, whether the performance of these classes is measured in terms of attendance, discipline or scholarship. It was found that in the high school the pupils whose stay in the grades had been thus shortened showed no inadequacy of preparation. Superior ability and special training more than made up for the loss of a year of drill and for the lesser maturity of the pupils.

In 1910, also, Principal W. C. Washburn of Cincinnati, Ohio, tried the experiment of segregating bright children in the lower grades. Some 30 pupils taken from the third, fourth and fifth grades were placed under a teacher competent to meet their needs. The selection of the teachers proved in three instances to have been erroneous and these children were returned to the regular grades; the remainder of the class will complete two grades in one year. In the opinion of Principal Washburn this experiment in early segregation has demonstrated its value, not alone in the saving of time, but in the spirit of self-reliance, self-activity and self-examination developed in the pupils. "I have never witnessed," says Mr. Washburn, "such orderly, intelligent work or felt such an atmosphere of joyful industry."

[1]For details the reader may consult a forthcoming article by Superintendent Downes in the *Psychological Clinic*.

We cite these two instances of the establishment of special classes for gifted children because the outcome coincides so exactly with the outcome in other cities where the plan has been tried. They add to the previously available factual evidence which has always corroborated the theoretically obvious conclusion that the needs of gifted children cannot be adequately met by devices for flexible promotion, however ingenious these may be. The Cincinnati demonstration, furthermore, raises the query whether the segregation of gifted children ought not to begin early in the grades and continue throughout the elementary school. G. M. W.

SINGING IN THE PUBLIC SCHOOLS.

The present strong movement in the organization of public school music raises many psychological problems which may be solved by experiment in the educational psychology of music. Among them are the following: (1) What shall be the nature of the first approach to musical training in the grades? Music supervisors and teachers are divided into three camps on this question. One wing advocates technical training in sight-singing from the very start; another wing advocates that the training in the first two or three years shall be confined essentially to song appreciation, both hearing and singing of good songs; while the main body of teachers hold middle ground and make a compromise. (2) To what extent shall sight-singing exercises be varied by enriching associations, *e. g.*, by writing notes seen, named or heard? Here again the leaders in public school music are divided into three camps. One extreme wing holds that only that set of associations which is actually to be used by children throughout the course should be practiced, *i. e.*, singing from the printed staff; the other extreme would have us multiply associations, *e. g.*, by writing from dictation, composing and transposing; between these two extremes many, of course, find it easy to hold middle ground. (3) Should all public school children be required to sing? Musicians are the first and most pronounced in recognizing limitations and great diversities in musical ability. Yet we have the strange spectacle today of seeing singing made compulsory, regardless of natural ability and regardless of fitness for promotion on the basis of singing or hearing music. (4) Should music in the grades be taught by each teacher in her own room or by selected teachers? On this point the teachers of

music are about equally divided for and against the assigning of music to those teachers in a grade building who have the best natural ability as leaders in singing.

These are all questions about fundamentals. It is pitiful to watch the expensive attempt of this nation to settle such questions by the blind trial and error method. It is characteristic of educational waste. Such questions are readily reducible to controlled experimental conditions, and may be settled in a scientific way with enormous saving of money and mental energy. In some cases the psychological facts are already at hand, *e. g.*, as regards individual differences, and it remains only to bring the facts to bear in the normal schools and in the school systems. Some central agency, or some endowed fund, should be devoted to the scientific solution of these problems by systematic and thorough series of experiments and interpretation in the light of the known facts about the learning process. The solution is probably not single or simple in any case. Inquiry would reveal other and perhaps more significant problems. But only in this way can we lay a rational foundation for our aims and ideals in the teaching of this art. C. E. S.

PRACTICAL EUGENICS.

The announcement by Dean Sumner that the clergy of the Protestant Episcopal Cathedral of Saints Peter and Paul, Chicago, will hereafter refuse to perform the marriage service unless each of the contracting parties presents a certificate of health from a reputable physician is an interesting step in the direction of practical eugenics, and has aroused a great deal of comment in the daily press. It has long been recognized in medical circles that such a requirement was needed to protect the innocent from suffering for the sins of the guilty. Whether the stand taken by a single institution will be of great avail against sentimental prejudices regarding personal liberty is an open question. The claim is made by some that the only guarantee of protection is to be found in legal enactment. But such enactment can only result from popular conviction, and perhaps one of the chief benefits of Dean Sumner's action will be to raise the question for popular consideration and discussion. J. C. B.

NOTES AND NEWS.

There is announced for publication this summer the first annual volume of *L'Année Pédagogique,* by MM. L. Cellerier and L. Dugas (Paris, F. Alcan). The aim is to present a general review of the progress of educational science.

A benefactor of Cambridge University (England) has contributed $100,000 to found a new chair, to be known as the Balfour Professorship of Genetics. The donor also offers to build and equip a small station at Cambridge for the use of the professor, if this action should give the greatest promise for the advancement of research in genetics.

The daily press has been exploiting a couple of items of the "important, if true" variety, which should interest educational psychologists. The first reports that the director of the surgical clinic of Leipsic University "planted a piece of the thyroid gland taken from a healthy child into the *liver* of an imbecile child, who immediately afterward began to improve in intelligence, which increased until a complete cure was effected." The second reports that Professor Svante Arrhenius, at Stockholm, placed two groups of children of the same ages, and equivalent physical and mental ability in two classrooms, alike save that imbedded in the walls of the one were concealed wires carrying a high tension alternating current. The children who worked in the magnetic field, though it was unknown to themselves or their teachers, showed the effects at the end of a few weeks by growing on the average at a rate nearly double that of the children of the unmagnetized room and by surpassing them in grade of school performance.

The Trustees of the Peabody Education Fund, in closing the trust, announced some months ago that they would set aside for the endowment of the George Peabody College for Teachers the sum of $500,000, in addition to the $1,000,000 already devoted to this purpose, provided that the college raise a further sum of $1,000,000 before November 1, 1913. It is announced that $100,000 of this amount has already been contributed by Mr. J. P. Morgan.

The Music Supervisors' National Conference was held in St. Louis, Mo., March 19 to 22, Prof. C. A. Fullerton in the chair. The report of progress in public school music was gratifying. Nearly all the discussions took a decidedly psychological turn.

At the Cornell University Summer Session the work in psychology and education will be conducted by Professors DeGarmo and Whipple, Professor Baird of Clark University, Superintendent Elson of Cleveland and Superintendent Boynton of Ithaca, with the assistance of several instructors. Professor DeGarmo offers courses in the principles of education and the history of education, Professor Whipple in educational psychology, school hygiene, and mental and physical tests of school children; Professor Baird in introductory psychology, advanced psychology, introductory laboratory course, and the psychology of memory, imagination, learning and reasoning; Superintendent Elson in school organization, administration, supervision and management, and Superintendent Boynton in elementary education, with observation work in the East Hill School at Ithaca. Other closely related courses deal with the psychological basis of music, physical education, industrial education and the teaching of English, Latin, mathematics, physics, music, biology, geography, geology and drawing.

In the Harvard Summer School, July 2 to August 13, Prof. Ernest C. Moore of Yale University will give courses in principles of education and in school administration; Prof. Robert M. Yerkes of Harvard and Dr. Daniel W. LaRue of Stroudsburg Normal School will conduct courses in descriptive and in educational psychology, and Dr. William Healy, Director of the Juvenile Psychopathic Institute, Chicago, will offer a course on "The Psychology and Practical Training of the Mentally and Morally Abnormal, with special reference to Children."

Among the visiting instructors at the Dartmouth Summer School will be Prof. Melbourne Stuart Read of Colgate University, who will give courses in educational psychology, history of education and philosophy of education; Superintendent George Herbert Whitcher of Berlin, N. H., whose courses include child development and problems of secondary education; Superintendent Clarence E. Meleney of New York City, who will offer courses in principles of teaching in the elementary school and in school organization, and

Superintendent Edward L. Stevens of New York City, who will discuss the principles, organization and management of secondary schools.

At the University of Pittsburgh Dean Will Grant Chambers, Prof. Charles B. Robertson, Prof. Henry D. Sheldon, Prof. J. E. Wallace Wallin and their assistants are offering a large and varied list of courses in psychology and education during the summer term.

A special feature of the summer session of New York University will be the group of courses in the administration of recreation facilities under the direction of Mr. Lee F. Hanmer of the Russell Sage Foundation. With the rapid development of public playgrounds, recreation centers, city departments of recreation, vocation schools and social centers the efficient administration of recreation agencies becomes no small problem. The courses are designed to bring before school and civic recreation administrators the best and most approved forms of organization, promotion and administration of such agencies. Mr. Hanmer will be assisted in these courses by Mr. Clarence A. Perry of the Russell Sage Foundation, author of "Wider Use of the School Plant," and by Mr. William R. Harper, director of games and athletics, Brooklyn Training School for Teachers. Dr. Leonard P. Ayres, also of the Russell Sage Foundation, will give courses in the theory and practice of the measurement of educational processes and products.

The School of Education of the University of Pittsburgh announces for the spring term two new courses by Dr. J. E. W. Wallin, one on Clinical Psychology and the Study of Exceptional Children, and the other on The Care, Training and Education of Exceptional Children. Dr. Wallin will also direct a psychological clinic for the training of teachers of exceptional children.

The tenth annual meeting of the Brown University Teachers' Association was held at Providence, R. I., March 29 and 30. On Friday afternoon papers were read by Alfred E. Stearns, principal of Phillips Academy, on Moral Standards in the Schools; by F. S. Luther, president of Trinity College, on Moral Standards in the Colleges, and by Superintendent Arthur D. Call of Hartford, Conn., on The Growth of the Moral Life. The Saturday morning session was devoted to a discussion of incentives to study, following papers

by Prof. S. S. Colvin of the University of Illinois on Marks and the Marking System as an Incentive; by Superintendent R. T. Condon of Providence on Practical Efficiency as an Incentive, and by John B. Diman, headmaster of St. George's School, Middletown, R. I., on The Ideal as an Incentive. The annual dinner of the association, which was held in the Lyman Gymnasium on Friday evening, proved a most enjoyable occasion. The toastmaster, Professor Harkness, presented President Faunce and Professors Mead, Everett and Bronson of the University, who dwelt informally upon Alluring By-Paths for the Teacher, as exemplified in biology, philosophy and literature.

The conference on the conservation of school children, held at Lehigh University during the first week in April, under the auspices of the American Academy of Medicine, was largely attended by physicians and educators. Sessions were devoted to the following subjects: "Deficient and Backward Children," "Conservation of School Children," "Teaching Hygiene," and "Medical Inspection."

The Michigan Schoolmasters' Club held its forty-seventh annual session at Ann Arbor, March 26-30. Among the speakers were Prof. C. J. Keyser of Columbia, Dr. James F. Hosic, Chicago Teachers' College, President David Felmley, Illinois State Normal University, and Miss Sarah L. Arnold, dean of Simmons College, Boston.

Prof. W. H. D. Rouse of the Perse School, Cambridge, England, will offer courses at the summer session of Teachers' College, Columbia, on the oral or direct method of teaching Latin. This method involves the use of Latin in the classroom as a means of expression from the beginning.

At Teachers College, Columbia, Prof. E. L. Thorndike has secured leave of absence during the first semester of next year, and Prof. Paul Monroe during the second semester.

On the nomination of the Prussian Ministry of Public Instruction, Felix Krueger, Ph.D., professor of psychology at the University of Halle, has been appointed Kaiser Wilhelm professor at Columbia University for the academic year 1912-13. Professor Krueger will be in residence from September, 1912, until February, 1913.

Dr. Adolf Meyer, professor of psychiatry in the Johns Hopkins Medical School, sailed on March 16 for Switzerland.—*Science.*

Professor Guy Montrose Whipple of Cornell University recently gave a lecture before the Salem (Mass.) State Normal School on "The Supernormal Child," and another before the "Saturday Night Club," at Springfield, Mass., on "Recent Applications of Psychology to Law, Medicine, Education and Business Life."

Prof. Maurice A. Bigelow of Teachers College, Columbia, will give courses in biology at the summer session of the University of California.

W. C. Ruediger, professor of educational psychology in the Teachers College of the George Washington University, will give courses in education in the Summer School of West Virginia University, June 24 to August 23.

Superintendent Stratton D. Brooks of Boston, formerly professor of education at the University of Illinois, has been elected president of the University of Oklahoma. President Brooks will assume his new duties on May 1.

Dr. A. H. Yoder, formerly superintendent of the Tacoma (Wash.) schools, and more recently connected with the New York School of Philanthropy, has been elected president of the Whitewater (Wis.) State Normal School.—*Western Journal of Education.*

Dr. Lewis M. Terman, assistant professor of education, Stanford University, has been promoted to associate professor in that institution. Dr. Terman will offer two courses at the coming summer session of the University of Washington, Seattle, Wash., one on "The Hygiene of Education," and the other on "Problems of Experimental Pedagogy." Mr. J. B. Sears has been promoted from instructor to assistant professor of education in Stanford University.

Dr. W. H. Pyle has been promoted from instructor to assistant professor of educational psychology in the University of Missouri.

David Spence Hill, Ph.D., professor-elect of psychology and education of the University of Tennessee, resigned last fall to accept a chair of similar title in Tulane University of Louisiana. Dr. Hill is also serving as acting director of the School of Education, H. Sophie Newcomb Memorial College, the women's department of Tulane University.

PUBLICATIONS RECEIVED TO APRIL 1, 1912.

(Notice in this section does not preclude a more extended review.)

ARNOLD BENNETT. *Mental Efficiency, and Other Hints to Men and Women.* New York: George H. Doran Company, 1911. Pp. 119. 75 cents net.

Another popular book of the familiar "how to be successful" type, treating of mental efficiency, settling down in life, marriage, books, success, the secret of content, etc. We note that "mental calisthenics" are advocated as seriously as if no psychologist had ever studied the dogma of formal discipline.

H. M. BERNARD. *Some Neglected Factors in Evolution.* New York: G. P. Putnam's Sons, 1911. Pp. xxi, 489. $2.60 net.

This highly original book is the result of a life-time spent in careful study of the finer structures of living organisms. The author, a former pupil of Haeckel and a well-trained biologist, was led by his comparative studies on the retina to reject the commonly accepted view that the cell is the fundamental unit of living tissues, and to look for a simpler and more primitive unit. This he finds in the proto-mitotic network, composed of particles of chromatin arranged on a network of linin filaments. The cell is but an aggregation of these proto-mitotic units, and the whole body is an aggregate of a higher order. The author finds that his theory clears up many obscure phases of evolution, and is in accord with the most recent researches in genetics. He is able to reconcile the neurone theory of the structure of the nervous system with the discoveries by Bethe, Apathy and others of fibrillar interconnections between neurones. It is a book that must be read and pondered by all students of evolution.

WALTER S. CORNELL, M.D. *Health and Medical Inspection of School Children.* Philadelphia: F. A. Davis Company, 1912. Pp. xiv, 614.

A valuable contribution to the literature of school hygiene. To be reviewed.

B. M. DAVIS. *Agricultural Education in the Public Schools.* With an Introduction by C. H. Judd. Chicago: The University of Chicago Press, 1912. Pp. viii, 163.

This is a study of the development of agricultural education, "with particular reference to the agencies concerned." Separate

MICHIGAN STATE NORMAL COLLEG
TRAINING SCHOOL DEPARTMENT.

chapters are given to the Federal Department of Agriculture and Bureau of Education; to the State departments of education and State legislation; to the agricultural colleges and their various plans for extension work; to the State normal schools and the various educational associations; to educational periodicals, farmers' institutes, agricultural societies and boys' agricultural clubs; to courses offered in elementary and secondary schools, and to textbooks in agriculture. An annotated bibliography concludes the volume. The book will be of great value to the student of vocational education.

KNIGHT DUNLAP. *A System of Psychology.* New York: Charles Scribner's Sons, 1912. Pp. 368.

To be reviewed.

THEODORE FLOURNOY. *Spiritism and Psychology.* New York: Harper & Brothers, 1911. Pp. 353. $2.00 net.

"It is sympathetic, yet critical. While the author accepts the reality of telepathy, clairvoyance, telekinesis, materialization and many remarkable phenomena which apparently occur within the deeps of the subconscious mind, it is, nevertheless, critical in tone, and he does not accept the doctrine of spiritism."

CHARLES HUGHES JOHNSTON, PH.D., Editor. *High School Education: Professional Treatments of the Administrative, Supervisory and Specifically Pedagogical Functions of Secondary Education, with Special Reference to American Conditions.* New York: Charles Scribner's Sons, 1912. Pp. xxii, 555. $1.50.

The plan is to bring together in one volume a discussion, prepared by a number of specialists, of the problems presented in the teaching of the several subjects of the high-school curriculum. Further notice will follow.

DAVID STARR JORDAN. *The Heredity of Richard Roe. A Discussion of the Principles of Eugenics.* Boston: American Unitarian Association, 1911. Pp. 165. $1.20.

To be reviewed.

IRVING KING. *Social Aspects of Education.* New York: The Macmillan Company, 1912. Pp. xvi, 425.

This book marks a new step in the development of educational literature. It is made up of extensive citations from what may be called source materials, supplemented by the author's introductory and critical discussions. The work falls into two parts: (1) The external social relations of education, and (2) the internal social

aspects of education. Under the former caption are included such topics as the social view of education, the social origin of educational agencies, the social responsibility of the school, school and home relationships, the school as a community center, playground extension, industrial and vocational education, and education as a factor in social progress. The internal social organization of the school involves a discussion of the social life of the school, school government, social aspects of mental development, and the corporate life of the school in relation to moral training.

WILLIAM A. MCKEEVER. *Instructing the Young in Regard to Sex.* Home Training Bulletin, No. 8. Manhattan, Kansas: Published by the Author, 1912. Pp. 16. Price, two cents to prepay postage.

This excellent bulletin gives the substance of the best recent literature on the subject. Bulletins previously issued are: No. 1, The Cigarette Smoking Boy; No. 2, Teaching the Boy to Save; No. 3, Training the Girl to Help in the Home; No. 4, Assisting the Boy in the Choice of a Vocation; No. 5, A Better Crop of Boys and Girls; No. 6, Training the Boy to Work; No. 7, Teaching the Girl to Save.

CHARLES MERCIER. *Crime and Insanity.* New York: Henry Holt & Co., undated. (No. 17 of The Home University Library of Modern Knowledge). Pp. 255.

Treats of the nature of crime, especially from a biological standpoint; devotes considerable space to the classification of crimes, shows the extent and the nature of the influence of insanity on crime, and suggests needed alterations in criminal law.

RALPH BARTON PERRY. *Present Philosophical Tendencies.* New York: Longmans, Green & Co., 1912. Pp. 383. $2.60 net.

The sub-title, "A Critical Survey of Naturalism, Idealism, Pragmatism and Realism, together with a Synopsis of the Philosophy of William James," indicates the scope of this work. It is unquestionably one of the most interesting and important of recent philosophic surveys. Each of the leading contemporary trends in philosophy is presented sympathetically, yet with a keen critical insight, and the style of the whole is facile and entices to further reading.

CARL STUMPF, Editor. *Beiträge zur Akustik und Musikwisscnschaft.* Heft 6. Leipzig: J. A. Barth, 1911. 5 M.

Contains valuable reports on experimental and critical work in the psychology of music, by Stumpf, Köhler and Schaefer. The article on "The Significance of Ethnological Investigations for the Psychology and the Aesthetics of the Tonal Art" has direct educational bearing.